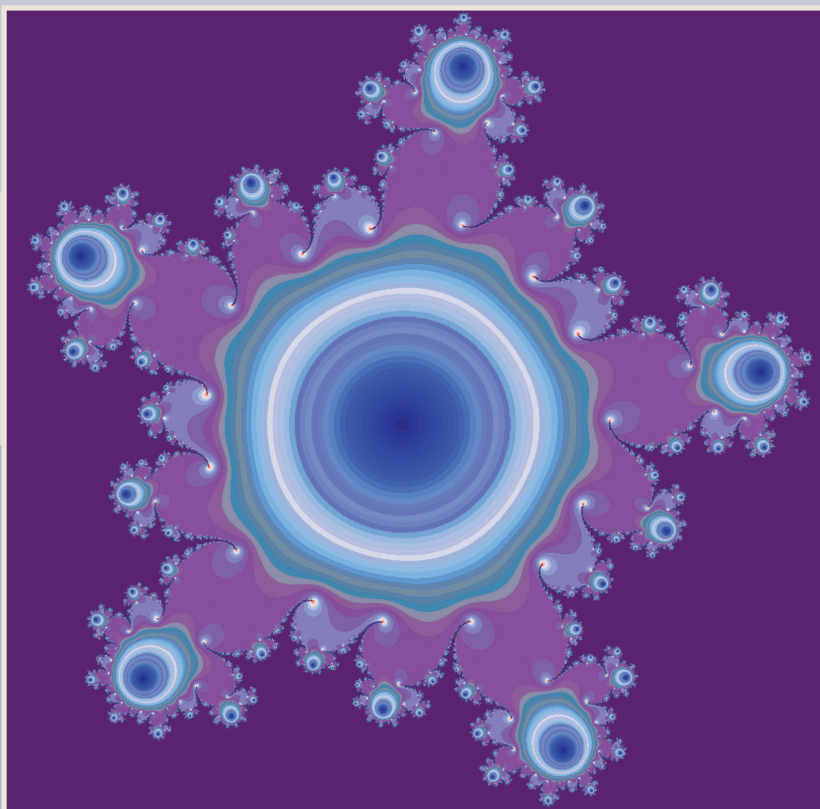


HISTORY OF  
MATHEMATICS  
VOLUME 38

# Early Days in Complex Dynamics

A History of Complex Dynamics  
in One Variable During 1906–1942

Daniel S. Alexander  
Felice Iavernaro  
Alessandro Rosa



American Mathematical Society  
London Mathematical Society

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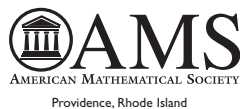


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## Preface

Our goal is to tell the story of the development of complex dynamics in the first half of the 20th century. We introduce the reader to the mathematics we cover through its origins in the 19th century. We then provide additional context for our work through discussions of differential equations, in particular, the relation of Henri Poincaré to the study of complex dynamics and the problem of small divisors.

The works of Pierre Fatou and Gaston Julia, and the controversial events surrounding their work, take up the middle third of our story. But the study of complex dynamics in the first half of the 20th century did not stop with Fatou and Julia's exploration of rational functions, and so we cover subsequent developments in the last third of our narrative, including the beginnings of transcendental and algebraic dynamics, as well as a detailed examination of the center problem, which culminated in 1942 with Carl Ludwig Siegel's successful solution of a small divisors problem that links complex dynamics to KAM theory.

The conclusion of our own narrative, however, does not signal the end of our book: we include numerous appendices, the bulk of which are written by mathematicians currently involved in the development of complex dynamics. Our hope is that they underscore the connections between current research and its history.

Our book ends with the usual back matter—a glossary, a detailed index and an exhaustive bibliography—but we also include four appendices of our own devising: Two contain extended biographical sketches of Fatou and Julia, and the next consists of capsule biographies of many of the other mathematicians whose work you encounter along the way. Our last appendix discusses the computer graphics we use to illustrate the works we discuss. Appendices where the author's name is not given were written by us.

Some brief comments regarding our methodology: Unless explicitly noted, translations are our own. For the sake of notational coherence, we have made very inconsequential changes in notation in some of our direct quotations. For example, most functions will be referred to as  $f$  whether or not that was the name used by the author. However, when we refer to an equation number in our quotations, you may assume the author did likewise, although obviously using a different number.

Most of the technical terms we use are introduced in the first chapter and can be located through the index where their first reference will be to their definition. Definitions of terms introduced later are indexed similarly. Bibliographical citations are keyed by the publication date and a name is added only if the citation is unclear.

We hope you enjoy our work. In the words of the great Stan Lee, we produced the kind of story we ourselves would enjoy reading.\*

---

\*The actual quote is, "For just once, I would do the type of story I myself would enjoy reading..." (Lee [1974, p. 17]).



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## Glossary

**Note:** Italicized terms in the glossary indicate another glossary entry.

$\overline{\mathbb{C}}$ : The extended complex plane or the Riemann sphere.

$\mathbb{D}$ : The open unit disc:  $\{z : |z| < 1\}$ .

$\mathbb{H}$ : The upper half-plane:  $\{z : \Re(z) < 1\}$ .

$\mathcal{I}$ : The iterative family of  $f$ , that is, the set  $\mathcal{I} = \{f^n : n = 0, 1, \dots\}$ .

**Abel functional equation:** The functional equation  $A \circ f = A + c$ , where  $f$  is known, and  $c$  is a complex constant. In the canonical Abel functional equation,  $c = 1$ .

**antecedent:** An image of a point  $z$  under the iteration of  $f$ , that is,  $f^n(z)$ , where  $n \in \mathbb{N}$ .

**attracting cycle (or orbit):** An *attracting fixed point* or *attracting periodic orbit*. We will refer generically to an *attracting periodic orbit* or an *attracting fixed point* as an *attracting orbit*, *attracting cycle* or *attractor*.

**attracting fixed point:** Given a function  $f$ , a *fixed point*  $\lambda$  satisfying  $|f'(\lambda)| < 1$ . If  $f'(\lambda) = 0$  then the fixed point  $\lambda$  is a *superattracting fixed point*.

**attracting periodic orbit of order  $p$ :** A *periodic orbit of order  $p$*  such that

$$\left| \frac{d}{dz} f^p(\lambda_k) \right| = \left| \prod_{k=0}^{p-1} f'(\lambda_k) \right| < 1.$$

Also called an *attracting cycle*.

**backward orbit:** The set  $O^-(z) = \{f^{-n}(z) : n = 0, 1, 2, \dots\}$ , where  $f^{-1}$  is the *total inverse* of  $f$ . One can also consider the orbit of a point under a branch of the inverse.

**Baker domain:** A region  $D$  in  $\overline{\mathbb{C}}$ , *forward invariant* under  $f$ , with an essential singularity  $a \in \partial D$ , with the property that while no orbits  $O^+(z)$  originating in  $D$  have an accumulation point in  $D$ , there is a  $p \in \mathbb{N}$  such that for all  $z \in D$ ,  $f^{pk}(z) \rightarrow a$  as  $k \rightarrow \infty$ .

**basin of infinity:** If the point at infinity is an *attracting fixed point*, then its *domain of convergence* is referred to as the basin of infinity.

**Böttcher functional equation:** The functional equation  $B \circ f = (B)^k$  where  $f$  is known, and  $k$  is the order of the first nonzero term in the Taylor series of  $f$  expanded about a point  $c$ .

**Cantor set:** A totally disconnected, perfect set.

**center:** Given a function  $f$ , a point  $\lambda$  satisfying  $f(\lambda) = \lambda$  where iteration is conformally equivalent to a rotation of  $\mathbb{D}$ . Alternatively,  $\lambda$  is a center if it satisfies the canonical *Schröder functional equation*  $S \circ f = f'(\lambda) \cdot S$ , on a neighborhood surrounding  $\lambda$ .

**completely invariant domain:** A connected component  $D$  of the *Fatou set* such that  $f(D) \subseteq D$  and  $f^{-1}(D) \subseteq D$  for all branches of the inverse of  $f$ .

**consequent:** A *preimage of a point*  $z$  under the iteration of  $f$ , that is, a point  $w$  such that  $z = f^n(w)$ , where  $n \in \mathbb{N}$ .

**critical point:** A point  $z$  such that  $f'(z) = 0$ .

**critical value:** The point  $w = f(z)$ , where  $z$  is a *critical point* of  $f$ .

**degree of a rational function:** If  $f = p/q$  is a *rational function*, the maximum of  $\{\deg f, \deg q\}$ , written  $\deg f$ .

**derived set:** The set  $S'$  of limit points of a given set  $S$ .

**domain:** An open, connected set in  $\overline{\mathbb{C}}$ . Sometimes this will be part of the name of a particular set and is not intended to imply that the set is open or connected; for example, the domain of nonnormality is closed, and the domain of normality can be an infinite union of open, connected sets.

**domain of convergence:** The set of all  $z$  such that  $f^k(z)$  converges to a fixed point  $\lambda$ , often denoted  $A(\lambda)$ . It is possible that this set has infinitely many connected components in which case the component containing  $\lambda$  is called the *immediate domain of convergence*.

**domain of nonnormality:** The set of points  $z$  from  $\overline{\mathbb{C}}$  on which the *iterative family*  $\mathcal{I}$  is not a *normal family* on neighborhoods of  $z$ . Also called the *Julia set* of  $f$ .

**domain of normality:** The set of points  $z$  from  $\overline{\mathbb{C}}$  on which the *iterative family*  $\mathcal{I}$  is a *normal family* on some neighborhood of  $z$ . Also called the *Fatou set* of  $f$ .

**entire function:** An analytic function which is single valued at all finite points of the plane.

**exceptional value:** Let  $\mathcal{F}$  be a family of analytic (or *meromorphic*) functions on a domain  $D$ . If  $w \notin \bigcup_{f \in \mathcal{F}} f(D)$ , then  $w$  is an exceptional value for  $\mathcal{F}$  on  $D$ .

**Fatou set:** For a given function  $f$  the *domain of normality* for the *iterative family*  $\mathcal{I}$ . Since this term did not come into common usage until the 1980s, our use of it is somewhat anachronistic.

**filled-in Julia set:** The union of the *Julia set*  $J$  and the set of all  $z \in \mathbb{C}$  for which the *forward orbit* of  $z$ , under  $f$ , is bounded. This is usually applied when  $J$  is a closed curve in which case the filled-in Julia set equals the union of  $J$  and its interior.

**fixed point:** A point  $\lambda$  satisfying  $f(\lambda) = \lambda$  for a given function  $f$ .

**forward invariant:** A connected component  $D$  of the *Fatou set* such that  $f(D) \subseteq D$ .

It is also referred to as an *invariant domain*. If a forward invariant domain is also invariant for the *total inverse* of  $f$ , that is, if  $f^{-1}(D) \subseteq D$  for all branches of the inverse, it is said to be *completely invariant*.

**forward orbit:** The set  $O^+(z) = \{f^n(z) : n = 0, 1, 2, \dots\}$ .

**fundamental circle:** A circle  $C$  in  $\overline{\mathbb{C}}$  such that  $f(C) = C$  and  $f(\text{Int}(C)) = \text{Int}(C)$ .

**Herman ring:** A doubly connected component  $D$  of the *Fatou set* of  $f$  which is conformally isomorphic to an annulus  $A$  on which iteration by  $f$  (or some iterate of  $f$ ) is conformally equivalent to a rotation of  $A$ . It is an example of a *rotation domain*.

**immediate domain of convergence:** The component  $D$  of the *domain of convergence* of an *attracting fixed point*  $\lambda$  that contains  $\lambda$ . If the domain of convergence only consists of one component, then the domain of convergence coincides with the immediate domain of convergence.

**invariant domain:** A connected component  $D$  of the *Fatou set* such that  $f(D) \subseteq D$ .

An invariant domain is sometimes called *forward invariant*. If an invariant domain is also invariant under all branches of the *total inverse* of  $f$ , that is, if  $f^{-1}(D) \subseteq D$  for all branches of the inverse, it is *completely invariant*.

**irrationally neutral or indifferent fixed point:** Given a function  $f$ , a *fixed point*  $\lambda$  where  $|f'(\lambda)| = 1$  but is not a root of unity.

**iterative family:** The set  $\mathcal{I} = \{f^n : n = 0, 1, \dots\}$ .

**Julia set:** For a given function  $f$ , the *domain of nonnormality* for the iterative family  $\mathcal{I}$ . For *rational functions* of degree two or more, this is equivalent to the closure of the set of *repelling periodic points*. Since this term was not used until at least the 1920s and did not come into common usage until the 1980s, our use of it is somewhat anachronistic.

**Kœnigs' linearization theorem:** Let  $f$  be analytic on a neighborhood of  $\lambda$ . If  $\lambda$  is a *fixed point* of  $f$  satisfying  $0 < |\lambda| < 1$ , then there is a conformal mapping  $S$  from a neighborhood of  $\lambda$  onto a neighborhood of the origin satisfying the canonical *Schröder functional equation*,  $S \circ f = f'(\lambda)S$ .

**Lattès function:** A *rational function*  $l$  whose *Julia set* equals the entire Riemann sphere.

**limit function:** A function  $L$  on a component  $D$  of the *Fatou set* of  $f$ , such that a subsequence of the *iterative family*  $\mathcal{I}$  converges uniformly to  $L$  on compact subsets of  $D$ .

**meromorphic function:** A function which has a pole at one or more points  $z$  in a *domain*  $D$  is said to be meromorphic on  $D$ .

**Montel's normality criterion:** Let  $\mathcal{F}$  be a family of *meromorphic* functions on a *domain*  $D$ . If  $\mathcal{F}$  has at least three *exceptional values* on  $D$ , then it is a *normal family* on  $D$ . If the family is analytic, only two exceptional values are sufficient.

**multiplicity of a fixed point  $\lambda$ :** The multiplicity of a *fixed point*  $\lambda$  viewed as a root of  $f(z) = z$ . Since  $f(z) = z$  reduces to

$$0 = (\lambda - z) + a_1(z - \lambda) + a_{n+1}(z - \lambda)^{n+1} + \dots,$$

near  $\lambda$ , its multiplicity is greater than one only when the *multiplier*  $f'(\lambda) = a_1$  is one, in which case the multiplicity equals  $n + 1$ .

**multiplier of a fixed point:** The quantity  $f'(\lambda)$  where  $\lambda$  is a fixed point of  $f$ .

**neighborhood of infinity:** The set  $\{z : |z| > R\}$ , usually for large  $R$ .

**neutral (or indifferent) fixed point:** Given a function  $f$ , a *fixed point*  $\lambda$  with  $|f'(\lambda)| = 1$ . A neutral fixed point is *rationally neutral or indifferent* if  $f'(\lambda)$  is a root of unity; if it is not,  $\lambda$  is an *irrationally neutral or indifferent* fixed point.

**normal family:** A family of functions  $\mathcal{F}$  is normal on a *domain*  $D$  if every sequence of functions from  $\mathcal{F}$  contains a subsequence  $f_n$  which converges uniformly on compact subsets of  $D$ , or converges uniformly to  $\infty$  on  $D$ .

**periodic orbit of order  $p$ :** The set  $O^+(z_0) = \{z_0, z_1 = f(z_0), \dots, z_{p-1} = f^{p-1}(z_0)\}$ , where  $p$  is a *periodic point of order*  $p$ .

**periodic point of order  $p$ :** A point  $z$  satisfying  $f^p(z) = z$ , for  $p \in \mathbb{N}$ , with  $f^k(z) \neq z$  for  $0 < k < p$ .

**Picard's Big Theorem:** In any neighborhood of an isolated essential singularity, an analytic function takes on every value of  $\mathbb{C}$  except at most one. Each nonomitted value is taken on an infinite number of times in this neighborhood. The omitted value is called an *exceptional value*. For the case of an essential singularity of a *meromorphic function*, two values are excluded.

**Picard's Little Theorem:** An *entire function* from  $\mathbb{C}$  to  $\mathbb{C}$  that omits two or more values is constant.

**Poincaré functional equation:** The functional equation  $f \circ \theta = \theta \circ (s \cdot I)$ , where  $f$  is known, and  $s$  is a complex constant. Usually,  $s = f'(\lambda)$  where  $\lambda$  is a *fixed point* of  $f$  with  $|s| \geq 1$ .

**post-critical set:** The union of the sets  $O^+(w)$ , as  $w$  ranges over the set of *critical values* of  $f$ .

**preimage of a point  $z$ :** A point  $w$  such that  $z = f^n(w)$ , where  $n \in \mathbb{N}$ .

**properly discontinuous group:** Our usage is intended to suggest how the term was used when those mathematicians we wrote about used it. The action of a group  $G$  is discontinuous on a set  $D$  if  $G$  contains no infinitesimal transformations; that is, there is no element  $g \neq I$  of  $G$  such that  $g(z)$  is infinitesimally close to  $z$  for all  $z \in D$ . If there are points in  $D$  where an infinitesimal transformation exists, a discontinuous group is improperly discontinuous at that point, a term that is generally out of use nowadays; otherwise, its action is properly discontinuous. See Forsyth [1918, pp. 717–719].

**rational function:** A complex function  $f = p/q$ , where  $p$  and  $q$  are polynomials.

**rationally neutral or indifferent fixed point:** Given a function  $f$ , a *fixed point*  $\lambda$  where  $|f'(\lambda)|$  is a root of unity.

**repelling cycle (or orbit):** A *repelling fixed point* or *repelling periodic orbit*.

**repelling fixed point:** A *fixed point*  $\lambda$  of a function  $f$  with  $|f'(\lambda)| > 1$ .

**repelling periodic orbit of order  $p$ :** A *periodic orbit of order*  $p$  such that

$$\left| \frac{d}{dz} f^p(\lambda_k) \right| = \left| \prod_{k=0}^{p-1} f'(\lambda_k) \right| > 1.$$

Also called a *repelling cycle*.

**rotation domain:** The collective name for a *Siegel disc* or a *Herman ring*.

**Schröder functional equation:** The functional equation  $S \circ f = c \cdot S$ , where  $f$  is known and  $c$  is a complex constant. In the canonical Schröder functional equation,  $c = f'(\lambda)$  where  $\lambda$  is a *fixed point* of  $f$ .

***d'un seul tenant*:** Used by Fatou and Julia to describe path connectedness. Julia gave the following definition: a set is *d'un seul tenant* if, given  $\epsilon > 0$ , “one can find in the set a succession of points beginning and ending with the two points, such that the distance of each to the one following it is less than  $\epsilon$ ” [1918a, p. 58].

**Siegel disc:** A singly connected region  $D$  of the *Fatou set* of  $f$  which is conformally isomorphic to  $\mathbb{D}$  on which  $f$  (or some iterate of  $f$ ) is conformally equivalent to a rotation of  $\mathbb{D}$ . It is an example of a *rotation domain*. The *fixed point* is called a *center*.

**singular domain:** A component of the *Fatou set* of  $f$  such that the *iterative family*  $\mathcal{I}$  has nonconstant *limit functions*.

**superattracting fixed point:** Given a function  $f$ , a point  $\lambda$  satisfying  $f(\lambda) = \lambda$  and  $|f'(\lambda)| = 0$ .

**total inverse:** The multifunction defined by  $f^{-1}(z) = \{w : f(z) = w\}$ .

**total orbit:** The union of the *forward orbit*  $O^+(z)$  and the *backward orbit*  $O^-(z)$ .

**wandering domain:** A component of the *Fatou set*  $D$  such that the infinite sequence  $\{f^n(D)\}$  is pairwise disjoint.



## Bibliography

We list archival material first, followed by a list publications by author, publisher, or journal. In the case of joint authorship we have ordered the names alphabetically. Our citation key is the year of publication, followed by a lower-case letter (e.g., Fatou [1906b]) when there are multiple publications for the author in a given year. An upper-case “W” following a year indicates the work is available only on the World Wide Web. A paper that is accepted for publication but has yet to appear is denoted by “appear” and a paper in preparation but not submitted is denoted by “prep”.

### Archival material

- [A1-1911] *Arrêté pour l'admission à l'École Polytechnique*, Ministère de la Guerre, Direction du Génie; Bureau du Personnel, 5, 9 Mars 1911, pp. 1–15. Also in Bull. Officiel, 32, Édition Méthodique, p. 73.
- [A2-W] *Zur Erinnerung an Professor Dr. Hubert Cremer, Professor für Mathematik an der Rheinisch-Westfälischen-Technischen Hochschule Aachen*. Initiator und Erster Leiter des Rechenzentrums der RWTH Aachen; Zusammengestellt durch das Rechenzentrum der RWTH Aachen anl. eines Kolloquiums zur Ehrung von Prof. Dr. Hubert Cremer u. zur Feier des 25jährigen Bestehens des Rechenzentrums. Aachen, den 16 Mai 1984 [25 pp.]. <http://www.archiv.rwth-aachen.de/Zuse%20Z22.pdf>
- [A3] *Death certificate, Pierre Fatou*, Archives de la Mairie de Pornichet, August 9th 1929.
- [A4] F/17/25674, *Dossier de carrière de Pierre Joseph Louis Fatou*, Centre Historique des Archives Nationales, Paris.
- [A5] l'Illustration, *Le plus jeune membre de l'institut Grand Mathématicien Français*, n° 4751, 24 Mars 1934.
- [A6] F/17/28319, *Dossier, Gaston Maurice Julia*, Centre Historique des Archives Nationales, Paris.
- [A7] 61/AJ/170, *Concours d'entrée à l'Éc. Norm. Sup.*, Centre Historique des Archives Nationales, Paris.
- [A8] *Souvenirs sur Georges Humbert et Camille Jordan*, Archives du Collège de France, CDF 16/24, pp. 87–89.
- [A9] F/17/25827, *Dossier, Samuel Isaac Lattès*, Centre Historique des Archives Nationales, Paris.
- [A10] *Dossier, Samuel Isaac Lattès*, University Paul Sabatier, Toulouse.
- [A11] (*Le*) *Nouvelliste de Morbihan*, daily journal: n° 187, August 11th 1929, p. 4; n° 188, August 13th 1929, p. 4; n° 190, August 15th 1929, p. 3.
- [A12] (*Les*) *Nouvelles de Lorient et de Morbihan*, weekly journal: n° 469, August 17th 1929, p. 3.
- [A13] *Plis Cachetés*, Annuaire de l'Académie des Sciences, 1918, pp. 335–336.
- [A14] Quimper, Town archives, *État des médecins, pharmaciens et sages femmes exerçant dans la ville de Quimper*, September 7th 1836, filed 46—1.
- [A15-W] List of Tatsujiro Shimuzi's publications, <http://www.jams.or.jp/shimizu/lshimz-e.html>

## Books and Journal Articles

**Aarts, J. and Oversteegen, L.**

- [1993] *The geometry of Julia sets*, Trans. AMS, 338, 1993, pp. 897–918.

**Abate, M.**

- [1988] *Horospheres and iterates of holomorphic maps*, Math. Zeitschrift, 198, 1988, pp. 225–238.
- [1989] *Iteration theory of holomorphic maps on Taut domains*, Mediterranean Press, 1989.
- [1990] *The Lindelöf principle and the angular derivative in strongly convex domains*, J. Analyse Math., 54, 1990, pp. 189–228.
- [1991] *Angular derivatives in strong pseudoconvex manifolds*, Several Variables and Complex Geometry, Part 2 (Santa Cruz, CA, 1989), pp. 23–40; Proc. Sympos. Pure Math., 52, Part 2, AMS, Providence, RI, 1991.
- [1998] *The Julia-Wolff-Carathéodory theorem in polydisks*, J. Analyse Math., 74, 1998, pp. 275–306.

**Abate, M. and Tauraso, R.**

- [1999] *The Julia-Wolff-Carathéodory theorem(s)*, Complex Geom. Analysis in Pohang, 1997, pp. 161–172; Contemp. Math., 222, AMS, Providence, 1999.

**Abdo, G. and Godfrey, P.**

- [1999-W] *Table of conformal mappings using continuous coloring*, 1999, <http://my.fit.edu/~gabdo/>.

**Abel, N.H.**

- [1881] *Œuvres complètes d'Abel*, 2 vols., Johnson Reprint Corporation, I, 1964, pp. 61–65.

**Ageron, P.**

- [2003] *Histoire d'un mathématicien de Caen: Ludovic Zoretti*, <http://www.math.unicaen.fr/~ageron/histoire-phil.html>, 2003.

**Ahlfors, L.V.**

- [1932] *Quelques propriétés des surfaces de Riemann correspondant aux fonctions méromorphes*, Bull. SMF, 60, 1932, pp. 197–207.
- [1935] *Zur Theorie der Überlagerungsflächen*, Acta Math., 65, 1935, pp. 157–194.
- [1966] *Complex Analysis*, 2<sup>nd</sup> edition, McGraw-Hill, New York, 1966.

**Alain (Émile August Chartier)**

- [1936] *Histoire de mes pensées*, NRF, Gallimard, 1936.
- [1942] *Vigiles de l'esprit*, NRF, Gallimard, 1942.

**Alexander, D.S.**

- [1994a] *A history of complex dynamics: From Schröder to Fatou and Julia*, Vieweg, 1994.
- [1994b] *Civilized Mathematics*, MAA Focus, June 1994.
- [1995] *Gaston Darboux and the history of complex dynamics*, Historia Mathematica, 22, 1995, pp. 179–185.
- [1996a] *Newton's Method — Or is it?*, MAA Focus, October 1996.
- [1996b] *An Episodic History of Complex Dynamics from Schröder to Fatou and Julia*, Suppl. Rend. Circ. Mat. Palermo, Ser. II, 44, 1996, pp. 57–83.

**Amaldi, U.**

- [1954] *Della vita e delle opere di Salvatore Pincherle*, in *Opere Scelte di Salvatore Pincherle*, UMI, Edizioni Cremonese, 1954.

**Ando, T. and Fan, K.**

- [1979] *Pick-Julia theorems for operators*, Math. Zeitschrift, 168, 1979, pp. 23–34.

**Andonie, G.S.**

- [1967] *Istoria Matematicii în România*, Editura Științifică, București, Volume III, 1967.

**Andreoli, G.**

- [1916] *Sull' iterazione delle funzioni di variabili reali*, Rend. Accad. Lincei Roma, (5), 25, 2, 1916, pp. 129–133.
- [1919] *Sull' iterazione di una speciale funzione*, Rend. Accad. Lincei Roma, (5) 28, 1, 1919, pp. 420–424.
- [1937] *Sull' iterazione delle funzioni monotone*, Rend. Accad. Sci. Fis. Mat., Napoli, (4), 7, 1937, pp. 10–18.

**Appell, P.**

- [1891] *Sur des équations différentielles linéaires transformables en elles-mêmes par un changement de fonction et de variable*, Acta Math., 15, 1891, pp. 281–315.
- [1897] *Observations sur la Communications Précédente*, C.R. Acad. Sci. Paris, 124, 1897, pp. 1433–1434.

**Appell, P., Goursat, É. and Fatou, P.**

- [1930] *Théorie des fonctions algébriques d'une variable et des transcendentes qui s'y rattachent, tome II: Fonctions automorphes*, Gauthier-Villars, 1930, Deuxième édition, revue et augmentée.

**Arago, F.**

- [1957] *Joseph Fourier*, Biographies of Distinguished Scientific Men, London, 1957, pp. 242–286.

**Arnold, D.N.**

- [2008-W] *Graphics for complex analysis*, <http://www.ima.umn.edu/~arnold/complex.html>

**Arnold, V.I.**

- [1963] *Proof of a theorem by A.N. Kolmogorov on the invariance of quasi-periodic motions under small perturbations of the Hamiltonian*, Russian Math. Survey 18, 1963, pp. 13–40.
- [1965] *Small Denominators I: On the mappings of the circumference onto itself*, AMS Translations, 46, 1965, pp. 213–284.
- [1978] *Mathematical methods of classical mechanics*, 1<sup>st</sup> edition, Graduate Texts in Mathematics, 60, Springer-Verlag, New York, 1978.

**Arnold, V.I., Kozlov, V.V. and Neishtadt, A.I.**

- [2006] *Mathematical aspects of classical and celestial mechanics*, Dynamical Systems III, Series: Encyclopaedia of Mathematical Sciences, Volume 3. Springer-Verlag 3rd ed., Berlin, 2006

**Atela, P. and Hu, J.**

- [1996] *Commuting polynomials and polynomials with the same Julia set*, Internat. J. Bif. Chaos Appl. Engrg., Vol. 6, No. 12A, 1996, pp. 2427–2432.

**Athreya, K.B. and Ney, P.E.**

- [1972] *Branching processes*, Springer-Verlag, Berlin, 1972.

**Audin, M.**

- [2009] *Fatou, Julia, Montel, le grand prix des sciences mathématiques de 1918, et après, ...*, Springer-Verlag, Berlin, 2009.

**Babbage, C.**

- [1815] *Phil. Trans. Royal Soc. London*, 105, 1815, pp. 389–423.
- [1820] *Examples of the solutions of functional equations*, Cambridge, 1820.

**Bădescu, R.**

- [1929a] *Sur l'équation intégrale d'Abel généralisée*, C.R. Acad. Sci. Paris, 188, 1929, pp. 217–219.
- [1929b] *Sur l'équation intégrale d'Abel généralisée*, C.R. Acad. Sci. Paris, 188, 1929, pp. 851–853.
- [1929c] *Distribution des singularités. De la solution d'une équation intégrale linéaire*, C.R. Acad. Sci. Paris, 189, 1929, pp. 831–834.
- [1929c] *Sur une équation fonctionnelle*, Bull. Acad. Bruxelles, (5), 15, 1929, pp. 1062–1072.
- [1930a] *Sur une équation fonctionnelle*, C.R. Acad. Sci. Paris, 191, 1930, pp. 480–482.
- [1930b] *Solutions logarithmiques d'une équation intégrale*, C.R. Acad. Sci. Paris, 191, 1930, pp. 428–431.
- [1930c] *Sur l'équation intégrale de Volterra*, Mathesis, 44, 1930, pp. 71–74.
- [1931] *Résolution d'une équation fonctionnelle et fonctions itératives généralisées*, C.R. Acad. Sci. Paris, 192, 1931, pp. 599–602.
- [1932-36] *Sur l'équation intégrale de Fredholm dans le domaine complexe*, Verhandlungen Kongress Zürich, 2, 1932, p. 116; Bull. Acad. Sci. Roumaine, 16, 1933, pp. 108–110; Acad. Roumaine, Bull. Sect. Sci., 17, 1936, pp. 3–6.

**Bagnera, G. and De Franchis, M.**

- [1906] *Sur les surfaces hyperelliptiques*, C.R. Acad. Sci. Paris, 145, 1906, pp. 747–749.

**Baire, R.**

- [1990] *Lettres de René Baire à Emile Borel*. Cahiers du Séminaire d'Histoire des Mathématiques, 11, 1990, pp. 33–120.

**Baker, I.N.**

- [1955] *The iteration of entire transcendental functions and the solution of the functional equation  $f(f(z)) = F(z)$* , Math. Ann., 129, 1955, pp. 174–180.
- [1968] *Repulsive fixed points of entire functions*, Math. Zeitschrift, 104, 1968, pp. 252–256.
- [1970] *Completely invariant domains of entire functions*, in Shankar [1970], 1970, pp. 33–35.
- [1975] *The domains of normality of an entire function*, Ann. Acad. Sci. Fenn. Ser. A Math., 1, 1975, pp. 277–283.
- [1976] *An entire function which has wandering domains*, J. Austral. Mat. Soc., 22, 1976, pp. 173–176.
- [1984] *Wandering domains in the iteration of entire functions*, Proc. LMS, (3), 49, 1984, pp. 563–576.

**Baker, I.N. and Eremenko, E.**

- [1987] *A problem on Julia sets*, Ann. Acad. Sci. Fenn, 12, 1987, pp. 229–236.

**Baker, I.N., Kotus, J. and Lu, Y.**

- [1991] *Iterates of meromorphic functions I*, Ergod. Th. Dynam. Sys., 11, 1991, pp. 241–248.

**Baker, I.N. and Singh, A.P.**

- [1995] *Wandering domains in the iteration of compositions of entire functions*, Ann. Acad. Sci. Fenn. Ser. A Math., 20, 1995, pp. 149–153.

**Barański, K.**

- [2007] *Trees and hairs for some hyperbolic entire maps of finite order*. Math. Zeitschrift, 257, 1, 2007, pp. 33–59.

**Barba, G.**

- [1929] *Un problema d'iterazione razionale relativo ad un fascio sizigetico di forme bi-quadratiche*. Atti Catania, (5), 16, Nr. 18', 1929.
- [1936] *Sulla iterazione di una classe di funzioni*, Atti Accad. Naz. Lincei, Cl. Sci. Fis. Mat. Nat, (6), 23, 1936, pp. 473–477.

**Bargmann, D., Bonk, M., Hinkkanen, A. and Martin, G.J.**

- [1999] *Families of meromorphic functions avoiding continuous functions*, J. Analyse Math., 79, 1999, pp. 379–387.

**Barrow-Green, J.**

- [1997] *Poincaré and the Three Body Problem*, History of Mathematics, 11, AMS-LMS, 1997.  
 [appear] *An American goes to Europe. Three letters from Oswald Veblen to George Birkhoff in 1913/1914*, Math. Intelligencer, to appear.

**Bartocci, C.**

- [2000] *Henri Poincaré: geometria e caso, scritti di matematica e fisica*, Bollati Boringhieri, 2000.

**Beardon, A.F.**

- [1990] *Iteration of contractions and analytic maps*, J. LMS, 41, 1990, pp. 141–150.  
 [1991] *Iteration of rational functions*, Springer-Verlag, New York, 1991.  
 [1992] *Polynomials with identical sets*, Complex Variables, 17, 1992, pp. 195–200.

**Bedding, S. and Briggs, K.**

- [1996] *Iterations of quaternion functions*, Amer. Math. Monthly, 103, 1996, pp. 654–664.

**Bell, E.T.**

- [1986] *Men of Mathematics*, Simon & Schuster, New York, 1986.

**Belna, C.K., Colwell, P. and Piranian, G.**

- [1985] *The radial behavior of Blaschke products*, Proc. AMS, Vol. 93, No. 2 (February 1985), pp. 267–271.

**Beltrami, E.**

- [1978] *Memorie per la storia dell'Università di Pavia*, Ser. 1a, 1878.

**Bennett, A.A.**

- [1915] *The iteration of functions of one variable*, Ann. Math., (2), 17, 1915, pp. 23–60.  
 [1916a] *A case of iteration in several variables*, Ann. Math., (2), 17, 1916, pp. 188–196.  
 [1916b] *A case of iteration in several variables*, Bull. AMS, 22, 1916, pp. 487–488.

**Bergweiler, W.**

- [1993] *Iteration of meromorphic functions*, Bull. AMS, 29, 2, 1993, pp. 151–188.  
 [1998] *A new proof of the Ahlfors five islands theorem*, J. Analyse Math., 76, 1998, pp. 337–347.  
 [2000] *The role of the Ahlfors five islands theorem in complex dynamics*, Conf. Geo. and Dyn. 4, 2000, pp. 22–34.

**Bergweiler, W. and Eremenko, A.**

- [1995] *On the singularity of the inverse to a meromorphic function of finite order*, Rev. Mat. Iberoamericana, 11, 1995, pp. 355–373.

**Bergweiler, W., Haruta, M., Kriete, H., Meier, H.G. and Terglane, N.**

- [1993] *On the limit functions of iterates in wandering domains*, Ann. Acad. Sci. Fenn. Math., 18, 1993, pp. 369–375.

**Berkson, E. and Porta, H.**

- [1978] *Semigroups of analytic functions and composition operators*, Michigan Math. J., 25, 1978, pp. 101–115.

**Bernoulli, J.**

- [1710] *Problème inverse des forces centrales, extrait de la réponse de Monsieur Bernoulli à Monsieur Herman*, Mém. de l'Acad. R. des Sciences de Paris, 1710, pp. 521. *Opera Omnia I*, pp. 470-480.

**Bernstein, V.**

- [1932a] *Sur les directions de Julia de certaines fonctions entières*, J. Éc. Polytechnique, (2), 30, 1932, pp. 191-219.
- [1932b] *Sur les directions de Julia et de Borel des fonctions entières d'ordre fini*, C.R. Acad. Sci. Paris, 195, 1932, pp. 356-358.
- [1932c] *Sur l'analogie entre la distribution des droites de Julia des fonctions holomorphes et celle des points singuliers des fonctions analytiques*, C.R. Acad. Sci. Paris, 194, 1932, pp. 1629-1631.

**Berthon, P.**

- [1986] *Les plis cachetés de l'Académie des Sciences*, Revue d'Histoire des Sciences, 1986, XXXIX/1, pp. 71-78.

**Bertrand, M.J.**

- [1877] *Sur la possibilité de déduire d'une seule des lois de Kepler le principe de l'attraction*, C. R. Acad. Sci. Paris Sér. I Math., 84, 1877, 671-674.

**Bhattacharya, P.**

- [1969] *Iteration of analytic functions*, Ph.D. dissertation, University of London, 1969.
- [1971] *On the domain of normality of an attractive fixpoint*, Trans. AMS, 153, 1971, pp. 89-98.

**Bieberbach, L.**

- [1933] *Beispiel zweier ganzer Funktionen zweier komplexer Variablen, welche eine schlichte volumtreue Abbildung des  $\mathbb{R}^4$  auf einen Teil seiner selbst vermitteln*, Pr. Akad. Wiss. Sitzungsber, 1933, pp. 476-479.
- [1953] *Conformal Mapping*, Chelsea, 1953. Translation of 4th ed., *Einführung in die Konforme Abbildung*, Berlin, 1949.

**Biernacki, M.**

- [1928a] *Sur les droites de Julia des fonctions entières*, C.R. Acad. Sci. Paris, 186, 1928, pp. 1410-1412.
- [1928b] *Sur les droites de Julia des fonctions entières*, C.R. Acad. Sci. Paris, 186, 1928, pp. 1260-1262.

**Blanchard, P.**

- [1984] *Complex analytic dynamics on the Riemann sphere*, Bull. AMS, 11, 1984, pp. 85-141.

**Blaschke, W.**

- [1915] *Eine Erweiterung des Satzes von Vitali über Folgen analytischer Funktionen*, Leipziger Berichte, 67, 1915, pp. 194-200.

**Bloch, L.**

- [1925] *Les théorèmes de M. Valiron sur les fonctions entières et la théorie de l'uniformisation*, Ann. Fac. Sci. Toulouse, Ser. 3, 17, 1925, pp. 1-22.
- [1926] *Les fonctions holomorphes et méromorphes dans le cercle unité*, Mémorial des Sciences Mathématiques, fasc. 20, Gauthier-Villars Paris, 1926, p. 61.
- [1931] *Fatou*, Notices de l'Ass. des Anciens Élèves de l'Éc. Norm. Sup., 1931, pp. 52-58.

**Boas, H.**

- [2010] *Julius and Julia: Mastering the Art of the Schwarz Lemma*, MAA Monthly, 117, 2010, pp. 770-785.

**Bobleter, O.**

- [1990] *Professor Erika Cremer — A pioneer in gas chromatography*, *Chromatographia*, 30, 1990, pp. 471–476.

**Boehm, C.**

- [1937] *Mathematische Statistik in Wirtschaft und Technik*, *Jahresbericht DMV*, 47, 1937, pp. 239–242.

**Bogush, A.A., Gazizov, A.Z., Kurochkin, Y.A. and Stosui, V.T.**

- [2001] *On symmetry properties of Quaternionic Analogs of Julia sets*, Proc. 9th Annual Seminar NPCS-2000, Minsk, Belarus (L. Babichev and V. Kuvshinov, eds.), 2001, pp. 304–309.

**Bohr, H. and Landau, E.**

- [1910] *Über das Verhalten von  $\zeta(s)$  und  $\zeta_k(s)$  in der Nähe der Geraden  $\sigma = 1$* , *Gött. Nachr.*, 1910, pp. 303–330.

**Boltzmann, L.**

- [1982] *On the methods of theoretical physics*, Proc. Phys. Soc. London, Vol. No. 12, Issue 1, 1892, pp. 336–345.

**Borel, É.**

- [1894] *Sur quelques points de la théorie des fonctions*, C.R. Acad. Sci. Paris, 118, 1894, pp. 340–342.
- [1895] *Sur quelques points de la théorie des fonctions*, *Ann. Sci. Éc. Norm. Sup.*, Ser. 3, 12, 1895, pp. 9–55.
- [1896a] *Fondements de la théorie des séries divergentes sommables*, *J. Math. Pure Appl.*, (5), 2, 1896, pp. 103–122.
- [1896b] *Sur la région de sommabilité d'un développement de Taylor*, C.R. Acad. Sci. Paris, 123, 1896, pp. 548–549.
- [1896c] *Applications de la théorie des séries divergentes sommables*, C.R. Acad. Sci. Paris, 122, 1896, pp. 805–807.
- [1896d] *Sur les séries de Taylor*, C.R. Acad. Sci. Paris, 123, 1896, pp. 1051–1052.
- [1896e] *Démonstration élémentaire d'un théorème de M. Picard sur les fonctions entières*, C.R. Acad. Sci. Paris, 122, 1896, pp. 1045–1048.
- [1897] *Sur les séries de Taylor*, *Acta Math.*, 21, 1897, pp. 243–248.
- [1898] *Sur la recherche des singularités d'une fonction définie par un développement de Taylor*, C.R. Acad. Sci. Paris, 127, 1898, pp. 1001–1003.
- [1899] *Sur le prolongement des fonctions analytiques*, C.R. Acad. Sci. Paris, 128, 1899, pp. 283–284.
- [1900a] *Sur les séries de fractions rationnelles*, C.R. Acad. Sci. Paris, 130, 1900, pp. 1061–1064.
- [1900b] *Sur la généralisation du prolongement analytique*, C.R. Acad. Sci. Paris, 130, 1900, pp. 1115–1118.
- [1914] *Introduction géométrique à quelques théories physiques*, Gauthier-Villars, Paris, VII, 8°, 1914.
- [1917] *Leçons sur les fonctions monogènes uniformes d'une variable complexe*, Gauthier-Villars, 1917. Gaston Julia, ed.
- [1919] *L'intégration des fonctions non bornées*, *Ann. Sci. Éc. Norm. Sup.*, Ser. 3, 36, 1919, pp. 71–92.
- [1926] *Notice sur la vie et les travaux de Georges Humbert (1859–1921)*. *Mémoires Acad. Inst. Fr.*, (2), 58, No. I, 1926, pp. I–XIX.

**Bortolotti, E.**

- [1898] *Sulla convergenza degli algoritmi periodici e sulla risoluzione approssimata delle equazioni algebriche*, Bologna: Civelli, 8°, 1898.

**Bottazzini, U.**

- [1999] *Poincaré, il cervello delle scienze razionali*, 'I grandi della scienza', Le Scienze, 7, 1999.

**Böttcher, L.**

- [1898] *Beiträge zu der Theorie der Iterationsrechnung*, doctoral dissertation, Leipzig University, 1898.
- [1899] *Zasady Rachunki Iteracyjnego* (Principles of Iteration), Prace Matematyczno-Fizyczne, Warsaw, 10, 1899–1900, pp. 65–101.
- [1904a] *Über die Iteration der linearen Funktionen*, *Wiad. Mat.*, 8, 1904, pp. 291–307; 9, pp. 77–86.
- [1904b] *The principal laws of convergence of iterates and their application to analysis*, *Kasan Ges.*, (2), 13; Nr. 1, pp. 1–37; 14, Nr. 2, pp. 155–200; Nr. 3, 1904, pp. 201–234.
- [1909] *Nouvelle méthode d'intégration d'un système de  $n$  équations fonctionnelles linéaires du premier ordre de la forme  $U_i(z) = \sum_{j=1}^{j=n} A_{ij}(z)U_jF(z)$* , *Ann. Sci. Éc. Norm. Sup.*, Ser. 3, 26, 1909, pp. 519–543.

**Bourbaki, N.**

- [1960] *Éléments d'histoire des mathématiques*, Hermann, 1960.

**Bourlet, C.**

- [1897a] *Sur les opérations en général et les équations différentielles linéaires d'ordre infini*, 3, 14, *Ann. Sci. Éc. Norm. Sup.*, Ser. 3, 14, 1897, pp. 133–190.
- [1897b] *Sur certaines équations analogues aux équations différentielles*, *C.R. Acad. Sci. Paris*, 124, 1897, pp. 1431–1433.
- [1899] *Problème de l'itération*, *Ann. Fac. Sci. Toulouse*, Ser. 1, 12, 1899, pp. C1–C12.

**Boutroux, P.**

- [1907a] *Sur les fonctions inverses des fonctions entières*, *C.R. Acad. Sci. Paris*, 145, 1907, pp. 1406–1409.
- [1907b] *Sur les points critiques transcendants et sur les fonctions inverses des fonctions entières*, *C.R. Acad. Sci. Paris*, 145, 1907, pp. 708–710.
- [1909a] *Sur les singularités transcendentes des fonctions inverses de fonctions entières*, *C.R. Acad. Sci. Paris*, 149, 1909, pp. 255–258.
- [1909b] *L'inversion des fonctions entières*, *Rome 4th Math. Congr.*, 2, 1909, pp. 31–35.

**Branner, B.**

- [1989] *The Mandelbrot set*, in *Chaos and fractals; the mathematics behind the computer graphics*, Devaney, R. and Keen, L., eds., 1989, pp. 75–105. See Devaney and Keen [1989].

**Brian, E. and Demeulenaere-Douyère, C.**

- [1996] *Histoire et mémoire de l'Académie des Sciences. Guide de recherches*, Paris : Technique & Documentation, 1996.

**Bricard, R.**

- [1913] *Carlo Bourlet*, *Nouv. Ann.*, (4), 13, 1913, pp. 433–438.

**Briot, Ch. and Bouquet, J.-K.**

- [1856] *Recherches sur les propriétés des fonctions définies par des équations différentielles*, *J. Éc. Polytechnique*, Cahier, 36, 1856, pp. 133–198.

**Brjuno, A.D.**

- [1965] *Convergence of transformations of differential equations to normal forms*, *Dokl. Akad. Nauk USSR*, 165, 1965, pp. 987–989.



- Broer, H.W., Huitema, G.B. and Sevryuk, M.B.**  
 [1996] *Quasiperiodic tori in families of dynamical systems: order amidst chaos*, Lecture Notes in Math. 1645, Springer-Verlag 1996.
- Brolin, H.**  
 [1965] *Invariant sets under iteration of rational functions*, Arkiv för Matematik, 6, 1965, pp. 103–144.
- Brooks, R. and Matelski, J.P.**  
 [1978] *The dynamics of 2-generator subgroups of  $\text{PSL}(2, \mathbb{C})$* , Proc. 1978 Stony Brook Conference of “Riemann surfaces and related topics”, Kra and Maskit eds., pp. 65–71.
- Buff, X.**  
 [2000] *Fibonacci fixed point of renormalization*, Erg. Th. Dynam. Systems, 20, 2000, pp. 1287–1317.
- Buff, X. and Chéritat, A.**  
 [2005] *Ensembles de Julia quadratiques de mesure de Lebesgue strictement positive*, C.R. Acad. Sci. Paris, Ser. I, 340, 2005.
- Buhl, A.**  
 [1921] *Éloge de Samuel Lattès*, Extrait des Mémoires Acad. Sc. Inscriptions et Belles-Lettres de Toulouse, IX, 1921, pp. 1–13.  
 [1931] *Nécrologie: Gabriel Kœnigs*, L'Enseign. Math., 30, 1931, pp. 286–287.
- Bulletin de Société de Mathématiques de France**  
 [1921] Comptes Rendus des Séances, 49, 1921, pp. 1–59.  
 [1922] Comptes Rendus des Séances, 50, 1922, pp. 1–34.  
 [1926] Comptes Rendus des Séances, 54, 1926, pp. 1–45.
- Burckel, R.B.**  
 [1979] *An introduction to classical complex analysis*, v. 1, Birkhäuser Basel, 1979.  
 [1981] *Iterating analytic self-maps of discs*, Amer. Math. Monthly, 88, 1981, pp. 396–407.
- Butzer, P.L., Jansen, M. and Zilles, H.**  
 [1982] *Johann Peter Gustav Lejeune Dirichlet (1805–1859): Genealogie und Werdegang*, Dürerener Geschichtsblätter, 71, 1982, pp. 31–56.
- Cahen, E.**  
 [1894] *Sur la fonction  $\zeta(s)$  et sur des fonctions analogues*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 11, 1894, pp. 75–164.
- Camacho, C.**  
 [1978] *On the local structure of conformal mappings and holomorphic vector fields in  $\mathbb{C}^2$* , Astérisque, 1978, pp. 59–60; pp. 83–94.
- Cantor, G.**  
 [1884] *On the power of perfect sets of points*, in *Classics on Fractals*, Gerald A. Edgar, ed., Addison-Wesley, Boston, 1993. Translation of *De la puissance des ensembles parfait de points*, Acta Math. 4, 1884, pp. 381–392.
- Carathéodory, C.**  
 [1912] *Untersuchungen über die konformen Abbildungen von festen veränderlichen Gebieten*, Math. Ann., 72, 1912, pp. 107–144.  
 [1913a] *Über die gegenseitige Beziehung der Ränder bei der konformen Abbildung des Inneren einer Jordan schen Kurve auf einen Kreis*, Math. Ann., 73, 1913, pp. 305–320.  
 [1913b] *Über die Begrenzung einfach zusammenhängender Gebiete*, Math. Ann., 73, 1913, pp. 323–370.

- [1926] *Über das Schwarzsche Lemma bei analytischen Funktionen von zwei komplexen Veränderlichen*, Math. Ann., 97, 1926, pp. 76–98.
- [1929a] *Über die Winkelderivierten von beschränkten analytischen Funktionen*, Sitzungsberichte Preuss Akad. Wiss. Berlin, Phys.-Math Kl., 1929, pp. 39–54.
- [1929b] *Stetige Konvergenz und normale Familien von Funktionen*, Math. Ann., 101, 1929, pp. 515–533.
- Carathéodory, C. and Landau, E.**
- [1911] *Beiträge zur Konvergenz von Funktionenfolgen*, Sitz. Kön. Preuss. Akad. Wiss. Berlin, 1911, pp. 587–613.
- Carleson, L. and Gamelin, T.W.**
- [1993] *Complex Dynamics*, Springer-Verlag, New York, 1993.
- Cauchy, A.-L.**
- [1842] *Mémoire sur un théorème fondamental, dans le calcul intégral*, C.R. Acad. Sci. Paris, 14, 1842, pp. 1020–1028.
- Cayley, A.**
- [1879a] *Applications of the Newton–Fourier Method to an imaginary root of an equation*, Quarterly J. Pure and Appl. Math., 16, 1879, pp. 179–185 = *Collected Papers*, **XI**, pp. 114–121.
- [1879b] *The Newton–Fourier imaginary problem*, Amer. J. of Math., 2, 1879, p. 97 = *Collected Papers*, **X**, p. 405.
- [1880] *On the Newton–Fourier imaginary problem*, Proc. Camb. Phil. Soc., 3, 1880, pp. 231–232 = *Collected Papers*, **XI**, p. 143.
- [1889–1897] *The Collected Papers of Arthur Cayley*, Cambridge University Press, 1889–1897.
- Celletti, A.**
- [2009] *Perturbation Theory in Celestial Mechanics*, Encyclopedia of Complexity and System Science, R.A. Meyer eds., Springer, 2009.
- Charles Scribner’s Sons (publisher)**
- [D1] *Dictionary of Scientific Biography*, Charles Scribner’s Sons, New York, 1970–1980.
- Chazy, J.**
- [1932] *Pierre Fatou*, Bull. Astronomique, 8, 1932, pp. 379–384.
- Chen, H.H. and Fang, M.L.**
- [1995] *On the value distribution of  $f^n f'$* , Sci. Sinica, Ser. A, 38, 7, 1995, pp. 787–798.
- Chen, H.H. and Gu, Y.**
- [1993] *An improvement on Marty’s criterion and its applications*, Sci. China, Ser. A, 36, 6, 1993, pp. 674–681.
- Chéritat, A.**
- [2001] *Recherche d’ensembles de Julia de mesure de Lebesgue positive*, Thesis, Orsay, 2001.
- Cherry, T.M.**
- [1964] *A singular case of iteration of analytic functions: a contribution to the small divisors problem*, Non-linear problems of Engineering, Academic Press, New York, 1964, pp. 29–50.
- Chervel, A.**
- [1994] *Brève histoire de l’agrégation de mathématiques*, Gazette des Mathématiciens, 59, Janvier 1994, pp. 3–9.

**Chierchia, L. and Falcolini, C.**

- [1994] *A direct proof of a theorem by Kolmogorov in Hamiltonian systems*, Ann. Scuola Norm. Sup. Pisa Cl. Sci. (4) 21, 1994, no. 4, pp. 541–593.

**Chi-Tai, C.**

- [1993] *Normal families of meromorphic functions*, World Scientific, 1993.

**Chu, C.H. and Mellon, P.**

- [1997] *Iteration of compact holomorphic maps on a Hilbert ball*, Proc. Amer. Math. Soc., 125, 1997, 1771–77.

**Chuang, C.T.**

- [1937] *Quelques théorèmes sur les directions de Julia et de Borel des fonctions méromorphes*, C.R. Acad. Sci. Paris, 204, 1937, pp. 404–405.

**Cigala, A.R.**

- [1904] *Sopra un criterio di instabilità*, Annali di Mat., (3), 11, 1904, pp. 67–78.

**Cinquini, S.**

- [1933] *Sulle successioni di funzioni convergenti verso una funzione olomorfa*, Rend. Accad. Lincei Roma, (6) 17, 1933, pp. 505–506.

**Cohen, A.**

- [1983] *A cache of 18th-century string*, The Galpin Society Jour., Vol. 36, 1983, pp. 37–48.

*Comptes Rendus Hebdomadaires des Séances de l'Académie des sciences*. Vie Académique (journal)

- [CR-1904] C.R. Acad. Sci. Paris, 139, 1904.  
 [CR-1906] C.R. Acad. Sci. Paris, 143, 1906.  
 [CR-1913] C.R. Acad. Sci. Paris, 157, 1913, p. 1350.  
 [CR-1914] C.R. Acad. Sci. Paris, 159, 1914, pp. 156 & 948.  
 [CR-1915] C.R. Acad. Sci. Paris, 161, 1915.  
 [CR-1918] C.R. Acad. Sci. Paris, 167, 1918.  
 [CR-1918-Rapport] *Rapport de Grand Prix des sciences mathématiques*, C.R. Acad. Sci. Paris, 167, 1918, pp. 811–814.  
 [CR-173] C.R. Acad. Sci. Paris, 173, 192.

**Cooke, R.**

- [2001-W] *The Cauchy-Kovalevskaya Theorem*, unpublished manuscript. See <http://www.cem.uvm.edu/~cooke/ckthm.pdf>  
 [2010-W] *Andrey Nikolayevich Kolmogorov*, *Encyclopedia Britannica Online*, <http://www.britannica.com/EBchecked/topic/321441/Andrey-Nikolayevich-Kolmogorov>, 2010.

**Costabel, P.**

- [1984] *Les plis cachetés et la mémoire confiée à l'Académie*, La Vie des Sciences, Comptes Rendus, série générale, tome 1, n° 2, 1984, pp. 143–144.

**Cotter, J.F.**

- [2000] *The Divine Comedy*, Revised Edition, Forum Italicum Publications, 2000.

**Coulomb, J.**

- [1978] *Necrology of Gaston Julia*, C.R. Acad. Sci. Paris, 287, 1978, pp. 1–2.

**Couturat, L.**

- [1903] *Opusculs et fragments inédits de Leibniz*, 1903, Felix Alcan, ed.

**Cowen, C.C.**

- [1981] *Iteration and the solution of functional equations for functions analytic on the unit disk*, Trans. AMS, 265, 1981, pp. 69–95.

**Cowen, C.C. and MacCluer, B.D.**

- [1995] *Composition operators on spaces of analytic functions*, CRC Press, Boca Raton, FL, 1995.

**Cremer, H.**

- [1925] *Über die Iteration rationaler Funktionen*, Jahresbericht DMV, 33, 1925, pp. 185–210.  
 [1927] *Zum Zentrumproblem*, Math. Ann., 98, 1927, pp. 151–163.  
 [1930a] *Über das Zentrumproblem (mit besonderer Berücksichtigung der Lückenreihen)*, Ber. Math.-Phys. Akad. Leipzig, 32, 1930, pp. 243–250.  
 [1930b] *Ein Existenzbeweis der Kreisringabbildung zweifach zusammenhängender schlichter Bereiche*, Berichte der Mathematisch.-Phys. Klasse der Sächsischen Akademie der Wissenschaften zu Leipzig, 82, 1930, pp. 190–192.  
 [1932a] *Über die Schrödersche Funktionalgleichung und das Schwarzsche Eckenabbildungsproblem*, Leipziger Berichte, 84, 1932, pp. 291–324.  
 [1932b] *Zur Frage der Existenz nichtkonstanter Grenzfunktionen der Folgen der Iterierten rationaler Funktionen*, Jahresbericht DMV, 42, 1932, 2, p. 131.  
 [1932c] *Über die Schrödersche Funktionalgleichung*, Jahresbericht DMV, 41, 2, 1932, p. 78.  
 [1934] *Über eine Eigenschaft der rationalen Funktionen*, Jahresbericht DMV, 44, 1934, pp. 276–278.  
 [1935] *Überkonvergenz und Zentrumproblem*, Math. Ann., 110, 1935, pp. 739–744.  
 [1938] *Über die Häufigkeit der Nichtzentren*, Math. Ann., 115, 1938, pp. 573–580.  
 [1948] *Dreikreisesatz und Zentrumproblem*, Commentarii Mathematici Helvetici, 21, 1948, pp. 185–188.  
 [1951] *Über das Iterationsproblem der analytischen Funktionen einer komplexen Veränderlichen*, Jahresbericht DMV, 54, 2, 1951, p. 31.  
 [1968] *Erinnerungen an Paul Koebe*, Jahresbericht DMV, Bd. 70, 1968, pp. 158–161.

**Cremer, H. and Cremer, L.**

- [1937] *Über die theoretischen Ableitungen der Nachhallgesetze*, Akustische Zeitschrift, 1937, pp. 224ff.

**Dalloz (publisher)**

- [1908] *Dictionnaire de Droit. Complet en deux volumes*, Dalloz, 1908.

**Dang, Y. and Kauffman, L.H.**

- [1997] *Hypercomplex Fractal Distance Estimation*, in *Fractal Frontiers*, Novak M.M. and Dewey T.G., eds., World Scientific, 1997, pp. 117–130.

**Dang, Y., Kauffman, L.H and Sandin, D.J.**

- [2002] *Hypercomplex Iterations Distance Estimation and Higher Dimensional Fractals*, Series on Knots and Everything, 17, World Scientific, 2002.

**Davenport, H.**

- [1985] *Reminiscences of conversations with Carl Ludwig Siegel*, Math. Intelligencer, 7, 2, 1985, pp. 76–79

**de la Llave, R.**

- [2001] *A tutorial on KAM theory*, Smooth Ergodic Theory and Its Applications (Seattle, WA, 1999), pp. 175–292, Proc. Sympos. Pure Math., 69, Amer. Math. Soc., Providence, RI, 2001.

**Delaunay, C.E.**

- [1846] *Nouvelle théorie analytique du mouvement de la lune*, Comptes Rendus 23, 968–970.  
 [1860] *Théorie du mouvement de la lune I*, Mémoire de l'Académie des Sciences 28, 1–883.

- [1867] *Théorie du mouvement de la lune II*, Mémoire de l'Académie des Sciences 29, 1–931.
- Dell'Agnola, C.A.**
- [1908a] *Sulla funzione limite di una successione di funzioni continue*, Lomb. Ist. Rend., (2) 41, 1908, pp. 676–684.
- [1908b] *Le successioni di funzioni continue e il teorema di Arzelà*, Lomb. Ist. Rend., (2) 41, 1908, pp. 287–307.
- [1909] *Sulla convergenza uniforme di una successione di funzioni continue*, Ven. Ist. Atti, 69 [(8) 12], 1909, pp. 151–159.
- de Longchamps, G.G.**
- [1902] *Sui radicali sovrapposti*, Suppl. al Period., 5, 1902, pp. 81–83.
- Denjoy, A.**
- [1907] *Sur les fonctions entières de genre fini*, C.R. Acad. Sci. Paris, 145, 1907, pp. 106–108.
- [1926] *Sur l'itération des fonctions analytiques*, C.R. Acad. Sci. Paris, 166, 1926, pp. 255–257.
- [1980] *Lettres à Paul Lévy*, Cahiers du Séminaire d'Historie des Mathématiques, tome 1, 1980, pp. 51–67.
- Devaney, R.**
- [1989] *An introduction to chaotic dynamical systems*, 2<sup>nd</sup> edition, Addison-Wesley, 1989.
- [2001] *Se<sup>x</sup>: Dynamics, Topology, and Bifurcations of Complex Exponentials*, Topology and Its Applications, 110, 2001, pp. 133–161.
- Devaney, R., Jarque, X., and Rocha, M.M.**
- [2005] *Indecomposable continua and Misiurewicz points in exponential dynamics*, Internat. J. Bifur. Chaos Appl. Engrg., 15, 2005, pp. 3281–3293.
- Devaney, R. and Keen, L., eds.**
- [1989] *Chaos and fractals; the mathematics behind the computer graphics*, Proc. Sympos. Pure and Appl. Math., AMS, Providence, RI, 1989.
- [1996] **Diacu, F. and Holmes, P.**  
*Celestial encounters. The origins of chaos and stability*, Princeton University Press, Princeton, NJ, 1996.
- Dickson, L.E.**
- [1919] *Mathematics in war perspective*, Bull. AMS, 25, 1919, pp. 289–311.
- Dinghas, A.**
- [1938] *Über das Phragmén-Lindelöfsche Prinzip und den Julia-Carathéodoryschen Satz*, S. B. Preuss. Akad. Wiss. Phys.-math. Kl., 1938, pp. 32–48.
- Dipert, R.**
- [1991] *The life and work of Ernst Schröder*, Modern Logic, 1, 2-3, 1990-1991, pp. 117–139.
- Dirichlet, J.**
- [1837] *Sur les séries dont le terme général dépend de deux angles, et qui servent à exprimer des fonctions arbitraires entre des limites données*, J. Reine Angew. Math., 17, 1837, pp. 35–56.
- Domoradzki, S.**
- [2010] *Mathematics in Lwów before the Lwów Mathematical School*, in *Mathematics in the Austrian-Hungarian Empire*, M. Bečvářová and C. Binder, eds., Matfyzpress, Praha, 2010, pp. 55–73.
- Douady, A. and Hubbard, J.H.**
- [1984-85] *Étude dynamique des polynômes complexes*. Prépublications Mathématiques d'Orsay, 2, 1984 and 4, 1985.

- [1992] *Compacts in  $\mathbb{C}$* , Topological methods in modern mathematics, Publish or Perish, Houston, 1992, pp. 429–465.
- Drasin, D.**
- [1969] *Normal families and the Nevanlinna theory*, Acta Math., 122, 1969, pp. 231–263.
- du Bois-Reymond, P.**
- [1883] *Über den Gültigkeitsbereich der Taylor'schen Reihenentwicklung*, Münch. Ber., 1876, pp. 225–237; and, with the same title, Klein Ann. XXI, 1883, pp. 253–254 and Klein Ann, XXI, 1883, pp. 109–117.
- [1888] *Sur les caractères de convergence et de divergence des séries à termes positifs*, C.R. Acad. Sci. Paris, CVI, 1888, pp. 941–944.
- Dugué, D.**
- [1952] *Vers un théorème de Picard global*, Ann. Sci. Éc. Norm. Sup., Ser., Ser. 3, 69, 1952, pp. 65–81.
- Dulac, H.**
- [1903-1904] *Recherches sur les points singuliers des équations différentielles*. Thesis, Gauthier-Villars, Paris, 4<sup>o</sup>, 1903 and J. de l'Éc. Pol., (2), 9, 1904, pp. 5–125.
- Dupuy, P.**
- [1896] *La vie d'Evariste Galois*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 13, 1896, pp. 197–266.
- Écalle, J.**
- [1975] *Théorie itérative: Introduction à la théorie des invariants holomorphes*, J. Math. Pure Appl., 54, 1975, pp 183–258.
- [1981-1985] *Le fonctions résurgentes et leurs applications*, Publ. Math. Orsay, y. I, no 81-05; t. II, no 81-06; t. III, no 85-05., 1981–1985
- Eggers, H.**
- [1876a] *Calculation of radicals*, The Analyst, 3, 1876, pp. 100-102.
- [1876b] *A new method of solving equations*, The Analyst, 3, 1876, pp. 149-150.
- Eliasson, L.H.**
- [1988-96] *Absolutely convergent series expansion for quasi-periodic motions*, Math. Phys. Electron. J. 2, 1996, paper 4, 33 pp. (electronic); see also: Report 2-88, Dept. of Math., University of Stockholm, 1988.
- Elin, M. and Shoikhet, D.**
- [2001] *Dynamic extension of the Julia-Wolff-Carathéodory theorem*, Dynam. Systems Appl., 10, 2001, pp. 421–438.
- Elin, M., Reich, S. and Shoikhet, D.**
- [2002] *Asymptotic behavior of semigroups of  $\rho$ -nonexpansive and holomorphic mappings on the Hilbert ball*, Ann. Mat. Pura Appl., 181, 2002, pp. 501–526
- [2008] *A Julia-Carathéodory theorem for hyperbolically monotone mappings in the Hilbert ball* Israel J. Math., 164, 2008, pp.397-411.
- Elin, M., Harris, L.A., Reich, S. and Shoikhet, D.**
- [2002] *Evolution equations and geometric function theory in  $J^*$ -algebras*, J. Nonlinear Convex Analysis 3, 2002, pp. 81–121.
- Eljoseph, N.**
- [1968] *On the iteration of linear fractional transformations*, Amer. Math. Monthly, 75, 1968, 362-366
- Encyclopediae**
- [E1] *Encyclopedia of Mathematics*, Kluwer Academic Publishers, London, 1987–1994.

- [E2] *Encyclopedic Dictionary of Mathematics*, 2<sup>nd</sup> edition, Mathematical Society of Japan, 1977.
- Enriques, F. and Severi, F.**
- [1909] *Mémoire sur les surfaces hyperelliptiques*, Acta Math., 32 (1909), pp. 283–392.
- L'Enseignement Mathématique* (journal)
- [1908] L'Enseign. Math., 10, 1908.  
 [1914] L'Enseign. Math., 16, 1914.  
 [1916] L'Enseign. Math., 18, 1916.  
 [1918] L'Enseign. Math., 20, 1918.  
 [1923] L'Enseign. Math., 23, 1923.  
 [1924] L'Enseign. Math., 24, 1924–1925.  
 [1928] L'Enseign. Math., 27, 1928.  
 [1929] L'Enseign. Math., 28, 1929.  
 [1933] L'Enseign. Math., 32, 1933.
- Eremenko, A.**
- [1989] *On the iteration of entire functions*, Dynamical Systems and Ergodic Theory, Banach Center Publications, Polish Scientific Publications, 23, 1989, pp. 339–345.
- Eremenko, A. and Lyubich, M.**
- [1984] *Iterates of entire functions*, USSR Math. Dokl., 30, 1984, pp. 592–594.  
 [1992] *Dynamical properties of some classes of entire functions*. Ann. Inst. Fourier, Grenoble, 42, 4, 1992, pp. 989–1020.
- Fabry, E.**
- [1896] *Sur les points singuliers d'une fonction donnée par son développement en série et l'impossibilité du prolongement analytique dans des cas très généraux*, Ann. Sci. Éc. Norm. Sup., Ser. 3 13, 1896, pp. 367–399.  
 [1897] *Sur les séries de Taylor*, C.R. Acad. Sci. Paris, 124, 1897, pp. 142–143.  
 [1898a] *Sur les séries de Taylor qui ont une infinité de points singuliers*, Acta Math., 22, 1898, pp. 65–88.  
 [1898b] *Sur les points singuliers d'une série de Taylor*, J. Math., (5), 4, 1898, pp. 317–358.  
 [1899] *Généralisation du prolongement analytique d'une fonction*, C.R. Acad. Sci. Paris, 128, 1899, pp. 78–80.
- Fan, K.**
- [1979] *Julia's lemma for operators*, Math. Ann., 239, 1979, pp. 241–245.  
 [1982] *Iterations of analytic functions of operators*, Math. Zeitschrift, 179, 1982, pp. 293–298.  
 [1983] *Iterations of analytic functions of operators II*, Linear and Multilinear Algebra, 12, 1983, pp. 295–304.  
 [1986] *The angular derivative of an operator-valued analytic function*, Pacific J. Math. 121, 1986, pp. 67–72.
- Farkas, J.**
- [1884] *Sur les fonctions itératives*, J. Math. Pure Appl., (3), 10, 1884, pp. 101–108.
- Farris, F.**
- [1998] *Review of Visual complex analysis, by Tristan Needham*, Amer. Math. Monthly, 105, 6, 1998, pp: 570–576. See <http://www.maa.org/pubs/amm/complements/complex.html> for supplementary material.
- Fatou, P.**
- [1904] *Sur les séries entières à coefficients entiers*, C.R. Acad. Sci. Paris, 138, 1904, pp. 342–344.  
 [1906a] *Séries trigonométriques et séries de Taylor*, Acta Math., 30, 1906, pp. 335–400.  
 [1906b] *Sur les solutions uniformes de certaines équations fonctionnelles*, C.R. Acad. Sci. Paris, 143, 1906, pp. 546–548.

- [1910] *Sur une classe remarquable de séries de Taylor*, Ann. Sci. Éc. Norm. Sup., (3), 27, 1910, pp. 43–53.
- [1913a] *Sur les lignes singulières des fonctions analytiques*, Bull. SMF, 41, 1913, pp. 113–119.
- [1913b] *Sur la convergence absolue des séries trigonométriques*, Bull. SMF, 41, 1913, pp. 47–53.
- [1917a] *Sur les substitutions rationnelles*, C.R. Acad. Sci. Paris, 164, 1917, pp. 806–808.
- [1917b] *Sur les substitutions rationnelles*, C.R. Acad. Sci. Paris, 165, 1917, pp. 992–995.
- [1918a] *Sur les équations fonctionnelles et les propriétés de certaines frontières*, C.R. Acad. Sci. Paris, 166, 1918, pp. 204–206.
- [1918b] *Sur les suites de fonctions analytiques*, C.R. Acad. Sci. Paris, 167, 1918, pp. 1024–1026.
- [1919-1920] *Sur les équations fonctionnelles*, Bull. SMF: 47, 1919, pp. 161–271 (Chap. I to III) and 48, 1920, pp. 33–94 (Chap. IV and V) and 208–314 (Chap. VI and VII). [Because of duplication of pages numbers, chapter numbers are included in citations.]
- [1921a] *Sur les domaines d'existence de certaines fonctions uniformes*, C.R. Acad. Sci. Paris, 1921, pp. 344–346.
- [1921b] *Sur les fonctions qui admettent plusieurs théorèmes de multiplication*, C.R. Acad. Sci. Paris, 173, 1921, pp. 571–573.
- [1921c] *Sur un groupe discontinu de substitutions algébriques*, C.R. Acad. Sci. Paris, 173, 1921, pp. 694–696.
- [1921d] *Sur l'évanouissement d'une branche de fonction uniforme aux points d'une singulière*, Darboux Bull., (2), 45, 1921, pp. 65–81.
- [1921e] *Sur le mouvement d'une planète dans un milieu résistant*, Bull. des Pub. Astr., Tome 1, VI, 1921.
- [1922a] *Sur l'itération de certaines fonctions algébriques*, Darboux Bull., (2), 46, 1922, pp. 188–198.
- [1922b] *Sur les fonctions invariantes par une substitution rationnelle*, Bull. SMF, 50, 1922, pp. 37–41.
- [1922c] *Sur certaines fonctions uniformes de deux variables*, C.R. Acad. Sci. Paris, 175, 1922, pp. 862–865.
- [1922d] *Sur les fonctions méromorphes de deux variables*, C.R. Acad. Sci. Paris, 175, 1922 pp. 1030–1033.
- [1923a] *Sur les fonctions holomorphes et bornées à l'intérieur d'un cercle*, Bull. SMF, 51, 1923, pp. 191–202.
- [1923b] *Sur les frontières de certains domaines*, Bull. SMF, 51, 1923, pp. 16–22.
- [1923c] *Sur le mouvement d'une planète dans un milieu résistant*, Darboux Bull. (2), 47, 1923, p. 19–40.
- [1923-24] *Sur l'itération analytique et les substitutions permutables*, J. Math. Pures Appl., 2, 1923, pp. 343–384; 3, 1924, pp. 1–49.
- [1924] *Substitutions analytiques et équations fonctionnelles à deux variables*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 41, 1924, pp. 67–142.
- [1926] *Sur l'itération des fonctions transcendantes entières*, Acta Math., 47, 1926, pp. 337–370.
- [1927] *Observations d'étoiles doubles*, J. des Observateurs, 10, 1927, p.96–101.
- [1928a] *Observations d'étoiles doubles*, J. des Observateurs, 11, 1928, p.76–84.
- [1928b] *Sur le mouvement d'un système soumis à des forces à courte période*, Bull. SMF, 56, 1928, pp. 98–139.
- [1929a] *Notice sur les travaux scientifiques*, Imp. Tequi, Paris, 1929.
- [1929b] *Sue un critère de stabilité*, C.R. Acad. Sci. Paris, 189, 1929, pp. 967–969.
- [1931] *Sur le mouvement d'un point matériel dans un champ de gravitation fixe*, Acta Astron., Ser. a, 2, 1931, 101–164

### Fatou, R.

- [F1] *Souvenir relatifs à Pierre Fatou: Astronome à l'observatoire de Paris*. Private recollections.
- [1949] *La marine de guerre en temps de paix*, Les Cahiers de l'Est, 4, 1<sup>er</sup> ser, 1946, pp 117–124.
- [1972] *L'évasion de Chine de la frégate Amethyst*, Editions France Empire, 1972. Translation of *The Escape of the Amethyst*, by C. E. Phillips, Heinmann, London, 1957.



- Fehr, H.**  
[1913] *Carlo Bourlet*, L'Enseign. Math., 15, 1913, pp. 417–418.
- Fejér, L. and Riesz, F.**  
[1921] *Über einige funktionentheoretische Ungleichungen*, Math. Zeitschrift, 11, 1921, pp. 305–314.
- Fernández, J.**  
[1989] *A note on the Julia sets of polynomials*, Complex Variables, 12, 1989, pp. 83–85.
- Flanigan, F.J.**  
[1983] *Complex variables: harmonic and analytic functions*, Dover, New York, 1983.
- Forman, P.**  
[1973] *Scientific internationalism and the Weimar Physicists: The ideology and its manipulation in Germany after World War I.*, Isis, 64, 2, 1973, pp. 151–180.
- Formenti, C.**  
[1875] *Su alcuni problemi di Abel*, Rendiconti Ist. Lombardo di Scienze e Lettere, Milano, 8, 1875, pp. 276–282.
- Fornaess, J.E.**  
[2002] *Real methods in complex dynamics*, in *Real methods in complex and CR geometry*, CIME, Martina Franca (Taranto), 2002 CIME Lecture Notes.
- Forsyth, A.R.**  
[1918] *Theory of Functions*, Vol 1 and 2, 3rd edition, Cambridge University Press, 1918 (rprnt. by Dover, 1965).
- Fourier, J.B.J.**  
[1822] *Théorie de la chaleur*, Paris, Firmin Didot 1822. Grand in-4°.  
[1831] *Analyse des équations déterminées*, 1831.
- de Franqueville, A. Ch.**  
[1896] *Le premier siècle de l'Institut de France: 1795–1895*, Ed. Rothschild: Tome I, 1895; Tome II, 1896.
- Fréchet, M.**  
[1965] *La vie et l'oeuvre d'Émile Borel*, L'Enseign. Math., 11, 1965, pp. 1–95.
- Frederick, C. and Schwartz, E.L.**  
[1990] *Conformal Image Warping* IEEE Comp. Graph. Appl., March, 1990, pp; 54–61. March 1990.
- Fricke, R. and Klein, F.**  
[1911] *Vorlesungen über die Theorie der automorphen Funktionen*, B.G. Teubner, Leipzig und Berlin, 1911.
- Friedland, S. and Milnor, J.**  
[1989] *Dynamical properties of plane polynomial automorphisms*, Ergod. Th. & Dynam., 9, 1989, pp. 67–99.
- Fulbrook, M.**  
[1991] *A Coincise History of Germany*, Cambridge University Press, 1991.
- Fuller, F. and Ward, M.**  
[1934] *The continuous iteration of real functions*, Bull. AMS, 40, 1934, pp. 393–396.

- Gallois, J.**  
[1994] *Ernest Chausson*, Fayard, 1994.
- Galois, É.**  
[1830] *Note sur la résolution des équations numériques*, Bull. Sci. Math., Physiques et Chimiques, XIII, §216, Juin 1830, pp. 413–414.
- Galton, F.**  
[1869] *Hereditary Genius: An inquiry into its laws and consequences*, MacMillan, London, 1869.
- Galton, F. and Watson, H.W.**  
[1874] *On the probability of extinction of families*, J. Anthropol. Inst. Great Britain and Ireland, 4, 1874, pp. 138–144.
- Galuzzi, M.**  
[2001] *Galois' note on the approximative solution of numerical equations (1830)*, Arch. Hist. Exact Sci., 2001, Vol. 56, No. 1, pp. 29–37.
- Gamelin, T.W. and Greene, R.E.**  
[1999] *Introduction to Topology*, 2<sup>nd</sup> edition, Dover, 1999.
- Garibian, V.S.**  
[1952] *Pensions and Rising Prices*, P. J. D. Wiles Oxford Economic Papers, New Series, Vol. 4, No. 2 (Jul., 1952), pp. 131–148.
- Garnier, R.**  
[1978] *Notice nécrologique sur Gaston Julia*, C.R. Acad. Sci. Paris, 286, 1978, pp. 126–133.
- Gauja, P.**  
[1934] *L'Académie des sciences de l'Institut de France*, Gauthier-Villars, Paris, 1934.
- Gersevanov, N.M.**  
[1941] *Über einige Anwendungen der Operationen der gebrochenen und der komplexen Iteration*, Doklady Akad. Nauk USSR, (2), 31, 1941, pp. 835–836.
- Gispert, H.**  
[1991] *La France Mathématique: La Société Mathématique de France (1872–1914)*. Société Française d'Histoire des Sciences et des Techniques, Paris, 1991.
- Gispert, H. and Hulin, N.**  
[2000] *L'enseignement des mathématiques dans ses liens à d'autres disciplines. Une perspective historique*. Bull. de l'Union des Professeurs de Spéciales, 192, October 2000.
- Gleick, J.**  
[1987] *Chaos: The making of a new science*, Viking Penguin, New York, 1987.
- Glicksberg, I.**  
[1976] *Julia's lemma for function algebras*, Duke Math. J., 43, 1976, pp. 277–284.
- Goebel, K.**  
[1982] *Fixed points and invariant domains of holomorphic mappings of the Hilbert ball*, Non-linear Analysis, 6, 1982, pp. 1327–1334.
- Goebel, K. and Reich, S.**  
[1982] *Iterating holomorphic self-mappings of the Hilbert ball*, Proc. Japan Acad., 58, 1982, pp. 349–352.

- [1984] *Uniform convexity, hyperbolic geometry and non-expansive mappings*, Marcel Dekker, 1984.
- Golusin, G.M.**
- [1939] *Iterationsprozesse für konforme Abbildungen mehrfach zusammenhängender Bereiche*, Rec. Math., Moscou, (2), 6, 1939, pp. 377–382.
- Gontcharoff, W.**
- [1927a] *Über ganze Funktionen und die Geraden von G. Julia*, Charikov, Comm. Soc. Math., (4), 1, 1927, pp. 94–107.
- [1927b] *Sur les fonctions entières et les droites de Julia*, C.R. Acad. Sci. Paris, 185, 1927, pp. 1100–1102.
- Götz, O.**
- [1967] *Über das funktionentheoretische Zentrumproblem*, Math. Ann., 172, 1967, pp. 211–216.
- Goursat, É.**
- [1887] *Sur les fonctions à espaces lacunaires*, Bull. S.M.F., 2, 11, 1887, pp. 109–114.
- [1893] *Sur une fonction à espace lacunaire*, Bull. S.M.F., 2, 17, 1893, pp. 247–248.
- Granata, E. and Lanzani, A.**
- [2006] *Quando la periferia è sinonimo di città pubblica*, Animazione Sociale, 8/9, 2006.
- Gräser, E.**
- [1930] *Über konforme Abbildung des allgemeinen zweifach zusammenhängenden schlichten Bereiches auf die Fläche eines Kreisrings*, Leipzig, Philos. Diss., 1930.
- Greene, R.E. and Krantz, S.G.**
- [1997] *Function theory of one complex variable*, Wiley, 1997.
- Grévy, A.**
- [1892] *Sur les équations fonctionnelles*, Bull. Sci. Math. Astr., Series 2, 16, Part 1, 1892, pp. 311–313.
- [1894] *Étude sur les équations fonctionnelles*, Ann. Sci. Éc. Norm. Sup., Ser 3, 11, 1894, pp. 249–323.
- [1896] *Étude sur les équations fonctionnelles*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 13, 1896, pp. 295–338.
- [1897] *Équations fonctionnelles avec second membre*, Bull. SMF, 25, 1897, pp. 57–63.
- Griffin, C.J. and Joshi, G.**
- [1991] *Octonionic Julia sets*, UM-P-91-79, July, 1991, 61 pp.
- [1992] *Octonionic Julia sets*, Chaos, Solitons & Fractals 2, 1992, pp. 11–24.
- [1993] *Transition Points in Octonionic Julia Sets*, Chaos, Solitons & Fractals 3, 1993, pp. 67–88.
- Gu, Y.X.**
- [1979] *A criterion for normality of families of meromorphic functions* (Chinese), Science Sinica Special Issue on Math., 1, 1979, pp. 267–274.
- Guerraggio, A. and Nastasi, P.**
- [1993] *Gentile e i matematici italiani — lettere 1907–1943*, Bollati Boringhieri, 1993.
- Guichard, C.**
- [1883] *Théorie des points singuliers essentiels*, Ann. Sci. Éc. Norm. Sup., (2), XII, 1883, pp. 301–395.

**Guiraldeng, P.**

- [1999] *Émile Borel (1871–1956). L'espace et le temps d'une vie sur deux siècles*, 1999.

**Hadamard, J.**

- [1888] *Sur le rayon de convergence des séries ordonnées suivant les puissances d'une variable*, C.R. Acad. Sci. Paris, 106, 1888, pp. 259–262.
- [1892] *Essai sur l'étude des fonctions données par leur développement de Taylor*, J. Math., 4, VIII, 1892, pp. 101–186.
- [1893] *Sur les caractères de convergence des séries*, C.R. Acad. Sci. Paris, 117, 1893, pp. 844–845.
- [1896] *Sur la distribution des zéros de la fonction  $\zeta(s)$  et ses conséquences arithmétiques*, Bull. SMF, 24, 1896, pp. 199–220.
- [1901] *Sur l'itération et les substitutions asymptotiques des équations différentielles*, Bull. SMF, 29, 1901, pp. 224–228.
- [1944] *Two works on iteration and related questions*, Bull. AMS, (2), 50, 1944, pp. 67–75.

**Hahn, R.**

- [1993] *L'anatomie d'une institution scientifique*, l'Académie des sciences de Paris 1666–1803, Ed. Archives Contemporaines, 1993.

**Hamilton, E.J.**

- [1977] *The role of war in modern inflation*, J. Economic History, Vol. 37, No. 1, The Tasks of Economic History (Mar., 1977), pp. 13–19.

**Handt, T. and Kneser, H.**

- [1930] *Beispiele zur Iteration analytischer Funktionen*, Mitt. der Naturwiss. Ver. für Neuvorpommern und Rügen, 57, Greifswald, 1930.

**Hardy, G.H. and Littlewood, J.E.**

- [1917] *Sur la convergence des séries de Fourier et des séries de Taylor*, C.R. Acad. Sci. Paris, 165, 1917, pp. 1047–1049.

**Harnack, A.**

- [1878] *Über eine Eigenschaft der Koeffizienten der Taylor'schen Reihe*, Clebsch Ann., 1878, XIII, pp. 555–559.

**Harris, L.A.**

- [1979] *Schwarz-Pick systems of pseudometrics for domains in normed linear spaces*, in *Advances in Holomorphy*, J.A. Borroso, ed., North Holland, Amsterdam, 1979, pp. 345–406.

**Harris, T.E.**

- [1963] *The theory of branching processes*, Springer-Verlag, Berlin Göttingen-Heidelberg, 1963.

**Hart, J.C., Francis, G.K. and Kauffman, L.H.**

- [1994] *Visualizing quaternion rotation*, ACM Trans. on Graphics, 13(3), July 1994, pp. 256–276.

**Hart, J.C. Kauffman, L.H. and Sandin, D.J.**

- [1989] *Ray tracing deterministic 3-D fractals*, Computer Graphics 23 (3), (Proc. SIGGRAPH 89,) July 1989, pp. 289–296.
- [1990] *Interactive visualization of quaternion Julia sets*, Proc. of Visualization, IEEE Computer Society Press, Oct. 1990, pp. 209–218.

**Hartogs, F.**

- [1927] *Über die Grenzfunktionen beschränkter Folgen von analytischen Funktionen*, Math. Ann., 98, 1927, pp. 164–178.

**Hartogs, F. and Rosenthal, A.**

- [1928] *Über Folgen analytischer Funktionen*, Math. Ann., 100, 1928, pp. 212–263.

**van Haselen, H.**

- [1929] *Van asymptotische ontwikkeling van holomorfe functies in een halfvlak*, Proefschrift Utrecht. VIII + 36 + II blz. Groningen, P. Noordhoff, 1929.
- [1932] *Sur l'itération de  $\log(1+z)$* , L'Enseign. Math., 30, 1932, pp. 269–271.

**Hasselblatt, B. and Katok, A.**

- [2002] *The development of dynamics in the 20th century and the contribution of Jürgen Moser*, Ergod. Theory Dynam. Systems, 22, 2002, pp. 1343–1364.

**Hayman, W.K.**

- [1959] *Picard values of meromorphic functions and their derivatives*, Ann. Math., 70, 1959, pp. 9–42.
- [1967] *Research problems in function theory*, The Athlone Press, 1967.

**Heins, M.H.**

- [1941] *On the iteration of functions which are analytic and single-valued in a given multiply-connected region*, Amer. J. Math., 63, 1941, pp. 461–480.

**Hendricksen, M.**

- [1967-W] *Leonard Gillman; an interview*, Topology Atlas, 37, <http://at.yorku.ca/t/o/p/c/37.htm>, 1967

**Herman, M.**

- [1979] *Sur la conjugaison différentiable des difféomorphismes du cercle à des rotations*, Publ. Math. IHES, 49, 1979, pp. 5–234. MR 81h:58039.
- [1984] *Esemples de fractions rationnelles ayant une orbite dense sur la sphère de Riemann*, Bull. SMF, 112, 1984, pp. 93–142.

**Hermann, J.**

- [1710a] *Extrait d'une Lettre de M. Herman à M. Bernoulli*, datée de Padoüe le 12. Juillet 1710, Histoire de l'Academie Royale des Sciences (Paris), pp. 519–521.
- [1710b] *Metodo d'investigare l'Orbite de' Pianeti, nell'ipotesi che le forze centrali o pure le gravità delgi stessi Pianeti sono in ragione reciproca de' quadrati delle distanze, che i medesimi tengono dal Centro, a cui si dirigono le forze stesse*, Giornale de Letterati D'Italia 2, pp. 447—467.

**Hermite, C.**

- [1985] *Lettres de Charles Hermite à Gösta Mittag-Leffler*, Cahiers du Séminaire d'Histoire des Mathématiques, 6, 1985, pp. 79–217.

**Hervé, M.**

- [1963] *Quelques propriétés des applications analytiques d'une boulé à  $m$  dimensions dans elle-même*, J. Math. Pures Appl., 42, 1963, pp. 117–147.
- [1981] *L'œuvre de Gaston Julia*, Cahiers du Séminaire d'Histoire des Mathématiques, 2, 1981, pp. 1–8.
- [1992] From *Supplement to The Dictionary of Scientific Biography*, Charles Scribner's Sons, Preprint.

**Hoidn, H.**

- [1982] *Osculation methods for the conformal mapping of doubly connected regions*, J. Appl. Math. and Phy. (ZAMP), 33, 1982, pp. 640–652.

**Holbrook, J.A.R.**

- [1983] *Quaternionic astroids and starfields*, Applied Mathematical Notes, 8 (2), 1983, pp. 1–34.

- [1987] *Quaternionic Fatou-Julia sets*, Ann. Sci. Math. Quebec, (1), 1987, pp. 79–94.
- Howell, R.F.**
- [1965] “The philosopher Alain and French classical radicalism”, *The Western Political Quarterly*, 18, 3, September 1965, pp. 594–614.
- Hua, X.H. and Vaillancourt, R.**
- [2005] *Dynamics of permutable meromorphic functions*, Scientific Proc. Riga Technical University, 26, Boundary Field Problems and Computer Simulation, 47th issue, 2005, pp. 25–31; CRM-3190, *Centre de Recherches Mathématique de l’Université de Montréal*, 08/2005.
- Hua, X.H., Wang, X.L. and Yang, C.C.**
- [2000] *Dynamics of transcendental functions*, Proc. of the Second ISAAC Congress, Vol. 1, Kluwer, 2000, pp. 311–316.
- Hua, X.H. and Yang, C.C.**
- [1998] *Dynamics of transcendental functions*, Gordon and Breach Science Publishers, 1998.
- [2003] *Dynamics of permutable transcendental entire functions*, J. Math. Anal. Appl., 278, 2003, pp. 512–526.
- Humbert, G.**
- [1917a] *Sur une Communication de M. Gaston Julia, intitulée ‘Sur les substitutions rationnelles’*, C.R. Acad. Sci. Paris, 165, 1917, pp. 1096–97.
- [1917b] *Rapport sur le mémoire, présenté comme thèse, par M. Julia*, C.R. Acad. Sci. Paris, 165, 1917, pp. 819–823.
- [1918] *Rapport Humbert*, Internal report on entries to the 1918 *Grand Prix des Sciences mathématiques*, Archives, Académie des Sciences, Institute de France, Paris.
- Hurwitz, A.**
- [1906] *Sur les points critiques des fonctions inverses*, C.R. Acad. Sci. Paris, 143, 1906, pp. 877–879.
- [1907] *Sur les points critiques des fonctions inverses*, C.R. Acad. Sci. Paris, 144, 1907, pp. 63–65.
- [1914] *Sur les points critiques des fonctions inverses des fonctions entières*, C.R. Acad. Sci. Paris, 158, 1914, pp. 1007–1008.
- Imaeda, K. and Imaeda, M.**
- [2000] *Sedenion: Algebra and analysis*, Applied Mathematics and Computation, Elsevier, Vol. 115, No. 2-3, pp. 77–88.
- Inou, H. and Shishikura, M.**
- [2006] *Renormalization for near-parabolic fixed points of holomorphic maps*, RIMS Kokyuroku, Kyoto University, 1482, 2006, pp. 47–48.
- Isenkrahe, C.**
- [1897] *Das Verfahren der Funktionswiederholung, Seine geometrische Veranschaulichung und algebraische Anwendung*, B. G. Teubner, Leipzig, 1897.
- Israel, G. and Nurzia, L.**
- [1984] *The Poincaré-Volterra theorem: a significant event in the history of the theory of analytic functions*, Hist. Math., 11, 1984, pp. 161–192.
- Iversen, F.**
- [1914] *Recherches sur les fonctions inverses des fonctions méromorphes*, Ph.D dissertation, l’Université de Helsingfors, 1914.

- [1918] *Sur les valeurs asymptotiques des fonctions méromorphes et les singularités transcendentes de leurs inverses*, C.R. Acad. Sci. Paris, 166, 1918, pp. 156–159.
- Jafari, F.**
- [1993] *Angular derivatives in polydisks*, Indiana J. Math., 35, 1993, pp. 197–212.
- Jahresbericht DMV (German Mathematical Society, publisher)**
- [1925] Jahresbericht DMV, 33, Vol. 2, 1925, p. 119.
- [1933] Jahresbericht DMV, 42, 1933, p. 87.
- [1934] Jahresbericht DMV, 43, 1934, p. 116.
- Jaisson, M.**
- [2003] *Prix et Subventions de l'Académie des Sciences 1916–1996*, Editions Brepols, 2003, 2 vols.
- Jakobson, M.V.**
- [1968] *Structure of polynomial mappings on a singular set*, Math. Sbornik 77(119), No. 1, 1968, pp. 105–124, in Russian. English translation: Math. USSR Sb., Vol. 6, No. 1, 1968, pp. 97–114.
- [1969] *On the problem of the classification of polynomial endomorphisms of the plane*, Vol. 80(122), No. 3(11), 1969, pp. 365–387, in Russian. English translation: Math. USSR Sb., Vol. 9, No. 3, 1969, pp. 345–364.
- Jentzsch, R.**
- [1917] *Untersuchungen zur Theorie der Folgen analytischer Funktionen*, Acta Math., 41, 1917, pp. 219–251.
- Johansen, P.**
- [1939] *Iteration von Funktionen zweier reellen Variablen und einer komplexen Variablen*, Skand. Aktuarietidskr., 22, 1939, pp. 101–113.
- Jordan, C.**
- [1883] *Cours d'analyse de l'École Polytechnique*, 3 vols., Gauthier-Villars, Paris, 1883.
- Joshi, G. and Kricker, A.**
- [1995] *Bifurcation phenomena of the non-associative octonionic quadratic*, Chaos, Solitons & Fractals, 5, 1995, pp. 761–782.
- Julia, G.**
- [1913] *Sur les lignes singulières de certaines fonctions analytiques*, Bull. SMF, 41, 1913, pp. 351–366 = *Œuvres*, IV, article #1.
- [1916a] *Sur les formes quadratiques binaires positives*, C.R. Acad. Sci. Paris, 162, 1916, pp. 151–154 = *Œuvres*, V, article #2.
- [1916b] *Sur la réduction des formes quadratiques positives*, C.R. Acad. Sci. Paris, 162, 1916, pp. 320–322 = *Œuvres*, V, article #3.
- [1916c] *Sur la réduction des formes quadratiques quaternaires positives*, C.R. Acad. Sci. Paris, 162, 1916, pp. 498–501 = *Œuvres*, V, article #4.
- [1916d] *Sur quelques propriétés du groupe fuchsien formé des substitutions modulaires qui n'altèrent pas une forme d'Hermite indéfinie*, C.R. Acad. Sci. Paris, 163, 1916, pp. 599–600 = *Œuvres*, V, article #5.
- [1916e] *Sur les formes de Dirichlet et sur les substitutions loxodromiques du groupe de Picard*, C.R. Acad. Sci. Paris, 163, 1916, pp. 691–694 = *Œuvres*, V, article #6.
- [1917a] *Étude sur les formes binaires non quadratiques à indéterminées réelles ou complexes, ou à indéterminées conjuguées*, (*Prix Bordin 1917*), Mémoires de l'Académie des Sciences, 55, 1917, pp. 1–296 = *Œuvres*, V, article #14.
- [1917b] *Sur la réduction des formes binaires à coefficients réels de degré quelconque*, C.R. Acad. Sci. Paris, 164, 1917, pp. 32–35 = *Œuvres*, V, article #7.
- [1917c] *Sur les formes binaires à coefficients et indéterminées complexes, de degré quelconque*, C.R. Acad. Sci. Paris, 164, 1917, pp. 352–355 = *Œuvres*, V, article #8.

- [1917d] *Sur la réduction des formes binaires de degré quelconque à coefficients et indéterminées réels ou complexes*, C.R. Acad. Sci. Paris, 164, 1917, p. 484 = *Œuvres*, **V**, article #9.
- [1917e] *Sur la réduction des formes à indéterminées conjuguées non quadratiques*, C.R. Acad. Sci. Paris, 164, 1917, pp. 571–574, pp. 619–622 = *Œuvres*, **V**, article #10.
- [1917f] *Sur les formes biquadratiques à indéterminées conjuguées et à coefficients entiers*, C.R. Acad. Sci. Paris, 164, 1917, pp. 910–913 = *Œuvres*, **V**, article #12.
- [1917g] *Sur les formes binaires à indéterminées conjuguées qui restent invariantes par un groupe de substitutions linéaires*, C.R. Acad. Sci. Paris, 164, 1917, pp. 991–993 = *Œuvres*, **V**, article #13.
- [1917h] *Sur les substitutions rationnelles*, C.R. Acad. Sci. Paris, 165, 1917, pp. 1098–1100 = *Œuvres*, **I**, article #15.
- [1918a] *Mémoire sur l'itération des fonctions rationnelles*, *Grand Prix des Sciences Mathématiques*, J. Math. Pur. Appl., (8), 1, 1918, pp. 47–245 = *Œuvres*, **I**, article #22.
- [1918b] *Sur l'itération des fractions rationnelles*, C.R. Acad. Sci. Paris, 166, 1918, pp. 61–64 = *Œuvres*, **I**, article #16.
- [1918c] *Sur des problèmes concernant l'itération des fractions rationnelles*, C.R. Acad. Sci. Paris, 166, 1918, pp. 153–156 = *Œuvres*, **I**, article #17.
- [1918d] *Sur les substitutions rationnelles*, C.R. Acad. Sci. Paris, 166, 1918, pp. 599–601 = *Œuvres*, **I**, article #18.
- [1919a] *Sur quelques problèmes relatifs à l'itération des fractions rationnelles*, C.R. Acad. Sci. Paris, 168, 1919, pp. 147–149 = *Œuvres*, **I**, article #23.
- [1919b] *Sur les fonctions entières ou méromorphes*, C.R. Acad. Sci. Paris, 168, 1919, pp. 990–992 = *Œuvres*, **II**, article #29.
- [1919-21] *Sur quelques propriétés nouvelles des fonctions entières ou méromorphes*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 36, 1919, pp. 93–125; 37, 1920, pp. 165–218; 38, 1921, pp. 165–181 = *Œuvres*, **II**, article #31,39,40.
- [1920] *Extension nouvelle d'un lemme de Schwarz*, Acta Math., 42, 1920, pp. 349–355 = *Œuvres*, **IV**, article #38.
- [1921a] *Sur la permutabilité des substitutions rationnelles*, C.R. Acad. Sci. Paris, 173, 1921, pp. 690–693 = *Œuvres*, **I**, article #46.
- [1921b] *Sur un classe d'équations fonctionnelles*, C.R. Acad. Sci. Paris, 173, 1921, pp. 813–816 = *Œuvres*, **I**, article #47.
- [1921c] *Sur les fonctions entières ou méromorphes*, C.R. Acad. Sci. Paris, 174, 1921, pp. 964–967 = *Œuvres*, **II**, article #48.
- [1921d] *Sur les solutions méromorphes de certaines équations fonctionnelles*, C.R. Acad. Sci. Paris, 173, 1921, pp. 1149–1152 = *Œuvres*, **I**, article #49.
- [1922a] *Les équations fonctionnelles et la représentation conforme*, C.R. Acad. Sci. Paris, 174, 1922, pp. 517–519 = *Œuvres*, **III**, article #51.
- [1922b] *Nouvelles applications de la représentation conforme aux équations fonctionnelles*, C.R. Acad. Sci. Paris, 174, 1922, pp. 653–655 = *Œuvres*, **III**, article #52.
- [1922c] *Sur la transformation des substitutions rationnelles en substitutions linéaires*, C.R. Acad. Sci. Paris, 174, 1922, pp. 800–802 = *Œuvres*, **III**, article #53.
- [1922d] *Mémoire sur la permutabilité des fractions rationnelles*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 39, 1922, pp. 131–215 = *Œuvres*, **I**, article #55.
- [1922e] *Sur les substitutions rationnelles à deux variables*, C.R. Acad. Sci. Paris, 175, 1922, pp. 1182–85 = *Œuvres*, **I**, article #58.
- [1923a] *Sur les substitutions rationnelles à deux variables*, C.R. Acad. Sci. Paris, 175, 1923, pp. 58–60 = *Œuvres*, **I**, article #59.
- [1923b] *Sur une classe d'équations fonctionnelles*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 40, 1923, pp. 97–150 = *Œuvres*, **I**, article #60.
- [1924] *Sur quelques applications de la représentation conforme à la résolution d'équations fonctionnelles*, Bull. SMF, 52, 1924, pp. 279–315 = *Œuvres*, **III**, article #61.
- [1925a] *Séries de fractions rationnelles d'itération*, C.R. Acad. Sci. Paris, 180, 1925, pp. 563–566 = *Œuvres*, **II**, article #62.
- [1925b] *Les séries d'itération et les fonctions quasi-analytiques*, C.R. Acad. Sci. Paris, 180, 1925, pp. 720–723 = *Œuvres*, **IV**, article #63.



- [1925c] *Sur un type de fractions quasi-analytiques*, C.R. Acad. Sci. Paris, 180, 1925, pp. 1150–1153 = *Œuvres*, **IV**, article #64.
- [1925d] *Fonctions quasi-analytiques et fonctions entières d'ordre nul*, C.R. Acad. Sci. Paris, 180, 1925, pp. 1240–1242 = *Œuvres*, **IV**, article #65.
- [1925e] *Sur les séries de fractions rationnelles itérées*, C.R. Acad. Sci. Paris, 181, 1925, pp. 1119–1122 = *Œuvres*, **II**, article #66.
- [1926a] *Sur la représentation conforme des aires simplement connexes*, C.R. Acad. Sci. Paris, 182, 1926, pp. 1314–1316 = *Œuvres*, **III**, article #70.
- [1926b] *Sur une série de polynômes liée à la représentation conforme des aires simplement connexes*, C.R. Acad. Sci. Paris, 183, 1926, pp. 10–12 = *Œuvres*, **III**, article #71.
- [1927] *Sur une classe de polynômes*, C.R. Acad. Sci. Paris, 184, 1927, pp. 1227–1228 = *Œuvres*, **III**, article #75.
- [1930a] *Sur la convergence des séries de fractions rationnelles itérées*, C.R. Acad. Sci. Paris, 191, 1930, pp. 987–989 = *Œuvres*, **II**, article #87.
- [1930b] *Les séries de fractions rationnelles itérées et les fonctions quasi-analytiques*, Arkiv Mat. Ast. Fys., 22A, 1930, pp. 1–8 = *Œuvres*, **IV**, article #89.
- [1931a] *Sur l'allure des séries d'itérées au voisinage des frontières de convergence*, C.R. Acad. Sci. Paris, 193, 1931, pp. 690–692 = *Œuvres*, **II**, article #91.
- [1931b] *Mémoire sur la convergence des séries formées avec les itérées successives d'une fraction rationnelle*, Acta Math., 56, 1931, pp. 149–195 = *Œuvres*, **II**, article #92.
- [1931c] *Fonctions continues sans dérivées formées avec les itérées d'une fraction rationnelle*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 48, 1931, pp. 1–14 = *Œuvres*, **II**, article #93.
- [1931d] *Mémoire sur l'extension du théorème d'Abel aux séries d'itérées  $\sum a_n R_n(z)$* , Ann. Sci. Éc. Norm. Sup., Ser. 3, 48, 1931, pp. 439–495 = *Œuvres*, **II**, article #95.
- [1932] *Addition au Mémoire sur la convergence des séries formées avec les itérées successives d'une fraction rationnelle*, Acta Math., 58, 1932, pp. 407–12 = *Œuvres*, **III**, article #102.
- [1934] *Notice de Candidature Académique*, *Œuvres*, **I**, pp.1–88.
- [1937] *Allocution prononcée au 2<sup>e</sup> centenaire de l'Université de Göttingen (27 juin 1937)*, 1937 = *Œuvres*, **VI**, article #195.
- [1965] *Discours prononcés à l'École Polytechnique pour la cérémonie d'adieux au Professeur Gaston Julia*, discours du Général Cazelles, Commandant de l'École Polytechnique, 1965 = *Œuvres*, **VI**, article #231.
- [1968-1970] *Œuvres*, 6 vols., Gauthier-Villars, Paris, 1968–1970.

#### **Kahan, W.**

- [1987] *Branch cuts for complex elementary functions and much ado about nothing's sign it*, in *The state of the art in numerical analysis*, eds., Iserles and Powell, Clarendon Press, Oxford, 1987, pp. 165–211.

#### **Kahane, J.P.**

- [1991] *Séries de Fourier, séries de Taylor, séries de Dirichlet; un aperçu de l'importance des travaux des mathématiciens français dans le période 1880–1910*, Cahiers d'Histoire & de Philosophie des Sciences, 34, 1991, p. 284.

#### **Kakutani, S.**

- [1939] *Iteration of linear operations in complex Banach spaces*, Proc. Acad., Tokyo, 14, pp. 295–300. Collect. Papers Fac. Sci. Osaka Univ., A 6, 1939, Nr. 16, 6 pp.

#### **Kapeluszny, J., Kuczumow, T. and Reich, S.**

- [1999] *The Denjoy-Wolff theorem in the open unit ball of a strictly convex Banach space*, Adv. Math. 143, 1999, pp. 111-123.

#### **Karpinska, B.**

- [1999] *Hausdorff dimension of the hairs without endpoints for  $\lambda \exp(z)$* , C.R. Acad. Sci. Paris, 328, Ser. I, 1999, pp. 1039–1044.

**Kasner, E.**

- [1911a] *The subdivisions of curvilinear angles*, Bull. AMS, (2), 17, 1911, p. 517.  
 [1911b] *Conformal geometry and equiangular invariants of horn angles*, Bull. AMS, (2) 17, 393, 1911.  
 [1913] *Conformal geometry*, Proc. 5th Int. Math. Cong., Cambridge, 2, 1913, pp. 81–87.  
 [1915] *Conformal classification of analytic arcs or elements: Poincaré's local problem of conformal geometry*, Trans. AMS, 16, 1915, pp. 333–349.

**Kasner, E. and Harrison, I.**

- [1950] *Voltaire on mathematics and Horn angles*, Scripta Math., 16, 1950, pp. 13–21.

**Kasner, E. and Newman, J.R.**

- [1956] *New Names for Old*, The World of Mathematics, Volume III, Simon and Schuster, New York, 1956, pp. 1996–2010.

**Keegan, J.**

- [2003] *La première guerre mondiale*, Perrin Editions, 2003.

**Kent, D.**

- [preprint] *Ambitious editors and amateur audiences: nineteenth-century mathematical periodicals in the United States*, preprint, 2011.

**Khatskevich, V. and Senderov, V.**

- [2001] *The Abel-Schröder equations for linear fractional maps of operator balls*, Dokl. Ross. Akad. Nauk, 379, 2001.

**Khatskevich V., Reich S. and Shoikhet D.**

- [2001] *Schröder's functional equation and the Koenigs embedding property*, J. Nonlinear Analysis, 47, 2001, pp. 3977–3988.

**Klingen, B.**

- [1962] *Wachstum und Periodeneigenschaften inverser Schröderfunktionen*, Ph.D. dissertation, Universität zu Köln, 1962.  
 [1968] *Wachstumsvergleich bei ganzen analytischen Funktionen*, Math. Annalen, 175, 1968, pp. 50–80

**von Koch, H.**

- [1906] *Une méthode géométrique élémentaire pour l'étude de certaines questions de la théorie des courbes planes*, Acta Math., XXX, 1906, pp. 145–176.

**Koebe, P.**

- [1907a] *Über die Uniformisierung beliebiger analytischer Kurven I*, Math. Ann., 67, 1907, pp. 145–224.  
 [1907b] *Über die Uniformisierung beliebiger analytischer Kurven*, Gött. Nachr., 1907, pp. 191–210.  
 [1910] *Über die Uniformisierung der algebraischen Kurven II*, Math. Ann., 69, 1910, pp. 1–81.  
 [1915] *Abhandlungen zur Theorie der konformen Abbildung*, J. für Math., 145, 1915, pp. 177–225.  
 [1927] *Allgemeine Theorie der Riemannschen Mannigfaltigkeiten*, Acta Math. 50, 1927, pp. 27–157.  
 [1941] *Zur allgemeinen Iterationstheorie der Uniformisierung algebraischer Funktionen*, Ber. Sächs. Akad. Wiss. Leipzig Math. Physische Kl., 93, 1941, pp. 43–66.

**Kœnigs, G.**

- [1883] *Recherches sur les substitutions uniformes*, Bull. Soc. Math. Astr., Ser. 2, 7, Part I, 1883, pp. 340–357.  
 [1884a] *Sur une généralisation du théorème de Fermat, et ses rapports avec la théorie des substitutions uniformes*, Bull. Soc. Math. Astr., Ser. 2, 8, 1884, pp. 286–288.

- [1884b] *Recherches sur les intégrales de certaines équations fonctionnelles*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 1, 1884, pp. 1–41.
- [1884c] *Sur les intégrales de certaines équations fonctionnelles*, C.R. Acad. Sci. Paris, 99, 1884, pp. 1016–1017.
- [1885a] *Sur les conditions d'holomorphisme des intégrales de l'équation itérative et de quelques autres équations fonctionnelles*, C.R. Acad. Sci. Paris, 101, 1885, pp. 1137–1139.
- [1885b] *Nouvelles recherches sur les équations fonctionnelles*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 2, 1885, pp. 385–404.

**Kojima, C.**

- [2004] *La Physique française avant Louis de Broglie*, Annales de la Fondation Louis de Broglie, 29, Hors serie 1, 2004, pp. 767–783.

**Kollerstrom, N.**

- [1992] *Thomas Simpson and "Newton's method of approximation:" an enduring myth*, Brit. Jour. Hist. Sci., 3, 1992, pp. 347–354.

**Kolmogorov, A.N.**

- [1953] *On dynamical systems with an integral invariant on the torus* (Russian), Doklady Akad. Nauk SSSR (N.S.) 93, 1953, 763–766.
- [1954] *On conservation of conditionally periodic motions under small perturbations of the Hamiltonian*, Dokl. Akad. Nauk SSSR 98, 1954, pp. 527–530.
- [1957] *Théorie générale des systèmes dynamiques et mécanique classique* (French), Proceedings of the International Congress of Mathematicians, Amsterdam, 1954, Vol. 1 pp. 315–333, Erven P. Noordhoff N.V., Groningen; North-Holland Publishing Co., Amsterdam, 1957. Engl. Transl., Abraham R., *Foundations of mechanics*, Benjamin, 1967, Appendix D.

**Koppe, M.**

- [1909] *Die Iteration des Sinus und anderer Funktionen*, Progr. (Nr. 115) Luisenstädt. Realgymn. Berlin. 28 S., 4<sup>o</sup>. 3 Fig.-Taf, 1909.

**Korkine, A.**

- [1882] *Sur un problème d'interpolation*, Bull. Soc. Math. Astr., (2), 6, 1882, pp. 228–242.

**Kovalishina, I.V.**

- [1990] *The Carathéodory-Julia theorem for matrix functions*, Teor. Funktsii Funktsional. Analysis iPrilozhen. 43, 1985, pp. 70–82, in Russian. English translation J. Soviet Math. 48, 1990, pp. 176–186.

**Kubota, Y.**

- [1983] *Iteration of holomorphic maps of the unit ball into itself*, Proc. AMS, 88, 1983, pp. 476–480

**Kuczumow, T., Reich, S. and Shoikhet, D.**

- [2001a] *The existence and non-existence of common fixed points for commuting families of holomorphic mappings*, Nonlinear Anal., 43, 2001, pp. 45–59.
- [2001b] *Fixed points of holomorphic mappings: a metric approach*, Handbook of Metric Fixed Point Theory, W. A. Kirk and B. Sims, eds. Kluwer, Dordrecht, 2001, pp. 437–515.

**Kuhn, T.S.**

- [1976] *The Copernican Revolution*, Harvard University Press, 1976.

**Lagarias, J.**

- [1985] *The  $3x + 1$  problem and its generalizations*, Amer. Math. Monthly, 92, 1, 1985, pp. 3–23.

**Lagrange, J.L.**

- [1798] *De la résolution des équations numériques de tous les degrés*, Paris, Duprat, an VI, 1798. Grand in-4.
- [1879] *Sur l'intégration d'une équation différentielle à différences finies, qui contient la théorie des suites récurrentes*, Œuvres, t. I; *Recherches sur les suites récurrentes*, Œuvres, t. IV; *Mémoire sur l'expression du terme général des séries récurrentes*, Œuvres, t. V, Gauthier-Villars, Paris, 1879.

**Laisant, C.A. and Bricard, R.**

- [1913] *Décès de M. Carlo Bourlet*, Nouv. Ann. Math., (4) 13, 1913, p. 337.

**Lakner, M. and Petek, P.**

- [1997b] *The one-equator property*, Experimental Math., 6, 2, 1997, pp. 109–115.

**Lakshmikantham, V. and Trigiante, D.**

- [2002] *Theory of Difference Equations. Numerical Methods and Applications*, Second Edition, Marcel Dekker, New York, 2002.

**Lakshmikantham, V., Leela, S. and Martynyuk, A.A.**

- [1989] *Stability Analysis Of Nonlinear Systems*, Marcel Dekker, Inc., New York, 1989.

**Landau, E.**

- [1904] *Über eine Verallgemeinerung des Picardschen Satzes*, Berl. Berichte, 1904, pp. 1118–1133.

**Landau, E. and Valiron, G.**

- [1929] *A deduction from Schwarz's lemma*, J. LMS, 4, 1929, pp. 162–163.

**Langley, J.K.**

- [1984] *On normal families and a result of Drasin*, Proc. Roy. Soc. Edin., 98A, 1984, pp. 385–393.
- [1999] *Permutable entire functions and Baker domains*, Math. Proc. Camb. Phil. Soc., 125, 1999, pp. 199–202.

**Laplace, P.S.**

- [1840] *A philosophical essay on probabilities*, J. Wiley, New York, 1902. Translation of *Essai philosophique sur les probabilités*, 65h ed., Bachelier, Paris, 1840, by F.W. Truscott and F.L. Emory.

**Lattès, S.**

- [1903] *Sur une classe d'équations fonctionnelles*, C.R. Acad. Sci. Paris, 136, 1903, pp. 905–908.
- [1906] *Sur les équations fonctionnelles qui définissent une courbe ou une surface invariante par une transformation*, Annali di Mat., 3, 13, 1906, pp. 1–137.
- [1908] *Nouvelles recherches sur les courbes invariantes par une transformation  $(X, Y; x, y, y')$* , Ann. Sci. Éc. Norm. Sup., Ser. 3, 25, 1908, pp. 221–254.
- [1910a] *Sur les séries de Taylor à coefficients récurrents*, C.R. Acad. Sci. Paris, 150, 1910, pp. 1413–1415.
- [1910b] *Sur la convergence des relations de récurrence*, C.R. Acad. Sci. Paris, 150, 1910, pp. 1106–1109.
- [1911a] *Sur les suites récurrentes non linéaires et sur les fonctions génératrices de ces suites*, Ann. Fac. Sci. Toulouse, Ser. 3, 3, 1911, pp. 73–124.
- [1911b] *Sur les formes réduites des transformations ponctuelles à deux variables. Application à une classe remarquable de séries de Taylor*, C.R. Acad. Sci. Paris, 152, 1911, pp. 1566
- [1911c] *Sur les formes réduites des transformations ponctuelles dans le domaine d'un point double*, Bull. SMF, 39, 1911, pp. 309–345.
- [1914] *Sur le prolongement analytique de certaines séries de Taylor*, Bull. SMF, 42, 1914, pp. 95–112.

- [1918a] *Sur l'itération des substitutions rationnelles et les fonctions de Poincaré*, C.R. Acad. Sci. Paris, 166, 1918, pp. 26–28.
- [1918b] *Sur l'itération des substitutions rationnelles à deux variables*, C.R. Acad. Sci. Paris, 166, 1918, pp. 151–153.
- [1918c] *Sur l'itération des fractions rationnelles*, C.R. Acad. Sci. Paris, 166, 1918, pp. 486–489. This original title appeared as *Sur l'itération des fractions irrationnelles* but was latter corrected, C.R. Acad. Sci. Paris, 166, 1918, p. 580.
- Lax, P.D.**
- [2002] *Jürgen Moser, 1928–1999*, Ergodic Theory Dynam. Systems, 22, 2002, pp. 1337–1342.
- Leau, L.**
- [1897] *Étude sur les équations fonctionnelles à une ou plusieurs variables*, Ann. Fac. Sci. Toulouse, Ser. 1, 11, 1897, pp. 1–110.
- [1899] *Sur les fonctions définies par un développement de Taylor*, C.R. Acad. Sci. Paris, 128, 1899, pp. 804–805.
- [1932] *Les suites de fonctions en general (domaine complexe)*, Mémorial des Sciences Mathématiques, LIX, Gauthier-Villars, Paris, 1932.
- Lebesgue, H.**
- [1926] *Notice sur la vie et les travaux de Camille Jordan (1838–1922)*, Mémoires Acad. Institut de France, (2), 58, No. I, 1926, pp. XXXIX–LXVI.
- [2004] *Les lendemains de l'intégrale; lettres à Émile Borel*, Paris, Vuibert, 2004.
- Lecornu, L.**
- [1887] *Sur les séries entières*, C.R. Acad. Sci. Paris, 104, 1887, pp. 349–352.
- Lee, S.**
- [1974] *Origins of Marvel Comics*, Simon and Schuster/Fireside Books, New York, 1974.
- Le Gars, S.**
- [2007-W] *L'émergence de l'astronomie physique en France (1860-1914): Aceurs et pratiques, Tome 1*, Doctoral Thesis, Université de Nantes, 2007. <http://en.scientificcommons.org/47959478>
- Legendre, A.M.**
- [1816] *Méthodes nouvelles pour la résolution approchée des équations numériques*, §III of *Supplément à l'Essai sur la théorie des nombres, seconde édition*. Bound with *Essai sur la théorie des nombres*, 2<sup>nd</sup> edition, Courcier, Paris, 1808.
- Lehto, O.**
- [1998] *Mathematicians without Borders*, Springer-Verlag, New York, 1998.
- Lémeray, E.**
- [1895] *Un théorème sur les fonctions itératives*, Bull. SMF, 23, 1895, pp. 255–263.
- [1896] *Sur la convergence des substitutions uniformes*, C.R. Acad. Sci. Paris, 123, 1896, pp. 793–94.
- [1897a] *Sur la convergence des substitutions uniformes*, Nouv. Ann. Math., 16, 1897, pp. 306–319.
- [1897b] *Dérivée des fonctions itératives par rapport à l'indice d'itération*, Bull. SMF, 25, 1897 pp. 92–95.
- [1898a] *Sur quelques algorithmes généraux et sur l'itération*, Bull. SMF, 26, 1898, pp. 10–15.
- [1898b] *Sur le calcul des racines des équations par approximations successives*, Nouv. Ann. Math., (3) 17, 1898, pp. 534–539.
- [1898c] *Sur la convergence des substitutions uniformes*, Nouv. Ann. Math., 17, 1898, pp. 75–80.
- Le Roy, Éd.**
- [1898a] *Sur les points singuliers d'une fonction définie par un développement de Taylor*, C.R. Acad. Sci. Paris, 127, 1898, pp. 348–350.

- [1898b] *Sur les séries divergentes et les fonctions définies par un développement de Taylor*, C.R. Acad. Sci. Paris, 127, 1898, pp. 654–657.
- [1899a] *Sur les séries divergentes et les fonctions définies par un développement de Taylor*, C.R. Acad. Sci. Paris, 128, 1899, pp. 492–495.
- [1899b] *Sur les séries divergentes et les fonctions définies par un développement de Taylor*, Ann. Fac. Sci. Toulouse, Ser. 2, 2, 1900, pp. 317–384 and pp. 385–430.

**Letherman, S., Schleicher, D. and Wood, R.**

- [1999] *On the  $3n + 1$ -Problem and Holomorphic dynamics*, Experimental Mathematics, 8, 3, 1999, pp. 241–251.

**Levi, B. and Viola, T.**

- [1933] *Intorno ad un ragionamento fondamentale nella teoria delle famiglie normali di funzioni*, Bollettino U.M.I., 12, 1933, pp. 197–203.

**Levi-Civita, T.**

- [1901] *Sopra alcuni criteri di instabilità*, Annali di Matematica Pura ed Applicata, Serie III – Tomo V, 1901, pp. 221–307.

**Lévy, P.**

- [1912a] *Sur une généralisation des théorèmes de M.M. Picard, Landau et Schottky*, C.R. Acad. Sci. Paris, 153, 1912, pp. 658–660.
- [1912b] *Remarques sur le théorème de M. Picard*, Bull. SMF, 40, 1912, pp. 25–39.
- [1927a] *Sur l'itération de la fonction exponentielle*, C.R. Acad. Sci. Paris, 184, 1927, pp. 500–502.
- [1927b] *Sur l'itération des fonctions et la notion de croissance régulière*, C.R. Acad. Sci. Paris, 184, 1927, pp. 663–665.
- [1927c] *Sur l'itération de la fonction exponentielle*, C.R. Acad. Sci. Paris, 184, 1927, pp. 500–502.
- [1928b] *Fonctions à croissance régulière et itération d'ordre fractionnaire*, Ann. di Mat. 4, 5, 1928, pp. 269–298.

**Lewittes, J.**

- [1968] *An extension of hyperbolic geometry and Julia's theorem*, Duke Math. J., 35, 1968, pp. 777–782.

**Li, S.**

- [1984] *The normality criterion of a class of the functions*, J. East China Normal Univ., 2, 1984, pp. 156–158.

**Li, X.**

- [1985] *The proof of Hayman's conjecture on normal families*, Sci. Sinica, Ser. A, 28, 6, 1985, pp. 596–603.

**Liebeck, H.**

- [1966] *The convergence of sequences with linear fractional recurrence relation*, Amer. Math. Monthly, 73, 1966, pp. 353–355.

**Lindelöf, E.**

- [1898a] *Remarques sur un principe général de la théorie des fonctions analytiques*, Acta Soc. Sci. Fenn., 24, 4°, 1898.
- [1898b] *Sur la transformation d'Euler et la détermination des points singuliers d'une fonction définie par son développement de Taylor*, C.R. Acad. Sci. Paris, 126, 1898, pp. 632–634.
- [1915] *Sur un principe général de l'analyse et ses applications à la, théorie de la représentation conforme*, Acta Soc. Sci. Fenn., 46, pp. 1–35.

**Lindstedt, A.**

- [1883] *Beitrag zur integration der differentialgleichungen der störungstheorie*, Mémoires de l'Académie Impériale des Sciences de St. Pétersbourg (7) **31** (no.4), 1883, pp. 1–19.

**Liouville, J.**

- [1851] *Sur des classes très-étendues de quantités dont la valeur n'est ni algébrique, ni même réductible à des irrationnelles algébriques*, J. Math. Pures Appl., 16, 1851, pp. 131–142.

**Litten, F.**

- [1996] *Ernst Mohr — Das Schicksal eines Mathematikers*, Jahresbericht DMV, 98, 4, 1996, pp. 192–212.

**Liverpool, L.**

- [1971] *Analytic Functions and Iteration Theory*, Ph.D. dissertation, University of London, 1971.
- [1974] *On entire functions with infinite domains of normality*, Aequationes Math., Vol. 10, 1974, pp. 189–200.

**Lombardo-Radice, L.**

- [1994] *Nikolaj Lobacevskij: Nuovi principi della geometria, con una teoria completa delle parallele*, Bollati Boringhieri, 1994.

**Lorch, E.R.**

- [1951] *Joseph Fels Ritt*, Bull. AMS, 57, 1951, pp. 307–318.
- [1980] *Joseph Fels Ritt from The Dictionary of Scientific Biography*, Volume 11, Charles Scribner's Sons, 1980, pp. 470–471.

**Lorentzen, L.**

- [1999] *Convergence of composition of self-mappings*, XIIth Conference on Analytic Functions, Ann. Univ. Marie Curie-Sklodowka Sect., A, 53, 1999, pp. 121–145.

**Lovett, E.O.**

- [1895] *The great inequality of Jupiter and Saturn*, Astronomical Journal, 15, 1895, pp. 113–127.

**Luckert, H.-J.**

- [1937] *Der Mathematiker in Technik und Industrie*, Jahresbericht DMV, 47, 1937, pp. 242–250.
- [1938] *Bemerkungen zur Ausbildung des Industriemathematikers*, Jahresbericht DMV, 48, 1938, pp. 258–260.

**Lyapunov, A.M.**

- [1907] *Problème général de la stabilité du mouvement*, Ann. Fac. Sci. Toulouse, Ser. 2, 9, 1907 (tr. from Russian by E. Davaux), pp. 203–474.

**MacCluer, B.D.**

- [1983] *Iterates of holomorphic self-maps of the open unit ball in  $C^n$* , Michigan Math. J., 30, 1983, pp. 97–106.

**Mackaay, E.**

- [1990] *Les droits intellectuels entre propriété et monopole*, J. Économ. Études Humaines, Vol. 1, no. 1, 1989/1990, pp. 61–100.

**Mackey, M. and Mellon, P.**

- [2002] *On an angular derivative result of Fan*, Math. Proc. R. Ir. Acad., 102 A, 2002, pp. 115–126.

- [2003] *Angular derivatives on bounded symmetric domains*, Israel J. Math., 138, 2003, pp. 291–315.
- MacLane, G.R. and Ryan, F.B.**
- [1962] *On the radial limits of Blaschke products*, Pacific J. Math., 12, no. 3, 1962, pp. 993–998.
- Maindron, E.**
- [1881] *Les fondations de prix à l'Académie des Sciences. Les Lauréats de l'Académie 1714–1880*, Gauthier-Villars, Paris, 1881.
- Mandelbrojt, S. and Schwartz, L.**
- [1965] *Jacques Hadamard (1865–1963)*, Bull. AMS, 71, 1965, pp. 107–129.
- Mandebrot, B.**
- [2004] *Fractals and chaos: the Mandelbrot set and beyond: selecta*, Springer-Verlag, New York, 2004.
- Marguet, F.**
- [1917] *L'histoire de la longitude à la mer*, Augustin Challamel, Paris, 1917.
- Marie, M.**
- [1872] *Détermination du périmètre de la région de convergence de la série de Taylor et des portions des différentes conjuguées comprises dans cette région, ou construction du tableau général des valeurs d'une fonction que peut fournir le développement de cette fonction suivant la série de Taylor*, C.R. Acad. Sci. Paris, 75, 1872, pp. 469–472.
- [1873] *Détermination du point critique où est limitée la convergence de la série de Taylor*, Liouville J., (2) XVIII, 1873, pp. 53–67.
- Marmi, S.**
- [1999] *An Introduction to small divisors*, arXiv:math/0009232v1, 1999.
- Marty, F.**
- [1931] *Recherches sur la répartition des valeurs d'une fonction méromorphe*, Ann. Fac. Sci. Toulouse, Ser. 3, 23, 1931, pp. 183–261.
- Mayer, J.**
- [1990] *An explosion point for the set of endpoints of the Julia set for  $\lambda \exp(z)$* , Ergodic Theory Dynam. Systems, 10, 1990, pp. 177–184.
- McMullen, C.**
- [1987] *Area and Hausdorff dimension of Julia sets of entire functions.*, Trans. AMS, 300, 1, 1987, pp. 329–342.
- Mellon, P.**
- [1996] *Another look at results of Wolff and Julia type for  $J^*$ -algebras*, J. Math. Anal. Appl., 198, 1996, pp. 444–457.
- Mendès-France, M.**
- [1988] *Nevertheless*, Math. Intelligencer, 10, 4, 1988, p. 35.
- Mercer, P.R.**
- [1999] *On a strengthened Schwarz-Pick inequality*, J. Math. Anal. Appl., 234, 1999, pp. 735–739.
- [2000] *Another look at Julia's lemma*, Complex Variables Theory Appl., 43, 2000, pp. 129–138.
- Milloux, H.**
- [1926] *Sur le théorème de Picard*, Bull. SMF, 53, 1926, pp. 181–207.



**Milnor, J.W.**

- [2004] “On Lattès’ maps”, in *Dynamics on the Riemann sphere. A Bodil Branner Festschrift*, P. Hjorth and C.L. Petersen, eds., European Math. Soc., 2006.
- [2006a] *Dynamics in one complex variable*, 3<sup>rd</sup> edition, Princeton Univ. Press, 2006.

**Minetti, S.**

- [1933] *Un teorema generale sulle successioni di funzioni convergenti verso una funzione ologomorfa*, Rend. Accad. Lincei Roma, (6) 17, 1933, pp. 58–61.

**Mineur, H.**

- [1929] *Les obsèques de Monsieur Pierre Fatou*, a Fatou family document which is a draft of the eulogy contained in the *Nouvelliste de Morbihan* (see entry [A11]).

**Minialoff, A.**

- [1935] *Sur une propriété des transformations dans l’espace de deux variables complexes*, C.R. Acad. Sci. Paris, 200, 1935, pp. 711–717.

**Miranda, C.**

- [1935] *Sur un nouveau critère de normalité pour les familles de fonctions holomorphes*, Bull. SMF, 63, 1935, pp. 185–196.

**Misiurewicz, M.**

- [1981] *On iterates of  $e^z$* , Ergodic Theory Dynam. Systems, 1, 1981, pp. 103–106.

**Moler, C.**

- [1998-W] *Cleve’s corner: trigonometry Is a complex subject*, MATLAB News & Notes, Summer, 1998, [http://www.mathworks.com/company/newsletters/news\\\_notes/clevescorner/sum98cleve.html](http://www.mathworks.com/company/newsletters/news\_notes/clevescorner/sum98cleve.html)

**Montel, P.**

- [1904] *Sur les suites des fonctions analytiques*, C.R. Acad. Sci. Paris, 138, 1904, pp. 469–471.
- [1907] *Sur les suites infinies de fonctions*, Ann. Sci. Éc. Norm. Sup., 24, Ser. 3, 1907, pp. 233–334.
- [1908] *Sur les points irréguliers des séries convergentes de fonctions analytiques*, C.R. Acad. Sci. Paris, 145, 1908, pp. 910–913.
- [1911] *Sur les fonctions analytiques qui admettent deux valeurs exceptionnelles dans un domaine*, C.R. Acad. Sci. Paris, 153, 111, pp. 996–998.
- [1912a] *Sur les familles de fonctions analytiques qui admettent des valeurs exceptionnelles dans un domaine*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 29, 1912, pp. 487–535.
- [1912b] *Sur quelques généralisations des théorèmes de M. Picard*, C.R. Acad. Sci. Paris, 155, 1912, pp. 1000–1003.
- [1916] *Sur les familles normales de fonctions analytiques*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 33, 1916, pp. 223–302.
- [1917a] *Sur la représentation conforme*, J. Math. Pures Appl., Ser. 7, 3, 1917, pp. 1–54.
- [1917b] *Sur la représentation conforme*, C.R. Acad. Sci. Paris, 164, 191, 1917, pp. 879–881.
- [1918a] *Lattès*, Notices de l’Ass. des Anciens Élèves de l’Éc. Norm. Sup., 1918, pp. 79–81.
- [1918b] *Sur les polynômes d’approximation*, Bull. SMF, 46, 1918, pp. 151–192.
- [1922a] *Sur les familles quasi-normales*, C.R. Acad. Sci. Paris, 174, 1922, pp. 22–24.
- [1922b] *Sur les familles quasi-normales de fonctions méromorphes*, C.R. Acad. Sci. Paris, 175, 1922, pp. 516–519.
- [1924] *Sur les familles quasi-normales de fonctions analytiques*, Bull. SMF, 52, 1924, pp. 85–114.
- [1926] *Sur le domaine correspondant aux valeurs d’une fonction analytique*, C.R. Acad. Sci. Paris, 183, 1926, pp. 940–942.
- [1927] *Leçons sur les familles normales de fonctions analytiques et leurs applications. Recueillies et rédigées par J. Barbotte*, Gauthier-Villars, Paris, 1927. Reprinted in 1974 by Chelsea Publishing Company, New York.

- [1929a] *Sur les domaines formés par les points représentant des valeurs d'une fonction analytique*, Ann. Sci. Éc. Norm. Sup., (3) 46, 1929, pp. 1–23.
- [1929b] *Sur les familles de fonctions analytiques dont aucune fonction limite n'est constante*, Mathematica 1, pp. 1–4; Bull. Cluj., 4, pp. 125–128.
- [1934] *Le rôle des familles normales*, L'Enseign. Math., 33, 1943, pp. 5–21.

**Moser, J.**

- [1959] Review of Kolmogorov's [1957], AMS Math. Reviews, MR0097598 (20 #4066), 1957.
- [1962] *On invariant curves of area-preserving mappings of an annulus*, Nachr. Akad. Wiss. Göttingen Math.-Phys. Kl. II 1962, 1962, 1–20
- [1966] *A rapidly convergent iteration method and non-linear differential equation II*, Ann. Scuola Norm. Sup. Pisa, Vol. 20, No. 3, 1966, pp. 499–535.

**Moser, J. and Siegel, C.L.**

- [1971] *Lectures on celestial mechanics*, Classics in Mathematics, Springer-Verlag, New York, 1971.

**Mues, E.**

- [1979] *Über ein Problem von Hayman*, Math. Zeitschrift, 164, 1979, pp. 239–259.

**Mumford, D., Series, C. and Wright, D.**

- [2002] *Indra's Pearls, The vision of Felix Klein*, Cambridge University Press, 2002.

**Myller-Lébedeff, V.**

- [1929] *Sur les fonctions entières ayant un ensemble donné de droites de M. Julia*, Mathematica, 2, 1929, pp. 44–47.

**Myrberg, P.**

- [1958] *Iteration von Quadratwurzeloperationen*, Ann. Acad. Sci. Fenn. Ser. A, 259, 1958.
- [1960] *Inversion der iteration für rationale Funktionen*, Ann. Acad. Sci. Fenn. Ser. A, 292, 1960.
- [1964] *Iteration der polynome mit reellen Koeffizienten*, Ann. Acad. Sci. Fenn. Ser. A, 348, 1964.
- [1965] *Iteration der polynome mit reellen Koeffizienten*, Ann. Acad. Sci. Fenn. Ser. A 374, 1965.

**Nauenberg, M.**

- [2010] *The early application of the calculus to the inverse square force problem*, Arch. Hist. Exact Sci. 64, 2010, pp. 269–300.

**Needham, T.**

- [2000] *Visual complex analysis*, Oxford University Press, 2000.

**Nehari, Z.**

- [1952] *Conformal mapping*, Dover Publications, New York, 1952.

**Netto, E.**

- [1887a] *Zur Theorie der iterirten Functionen*, Math. Ann., 29, 1887, pp. 148–153.
- [1887b] *Ueber einen Algorithmus zur Auflösung numerischer algebraischer Gleichungen*, Math. Ann., 29, 1887, pp. 140–157.
- [1887c] *Zur Theorie der iterirten Functionen*, Math. Ann., 29, 1887, pp. 148–153.
- [1894] *Ueber Iterirung gebrochener Functionen*, Schlömilch Z., XXXIX, 1894, pp. 382–384.
- [1896] *Vorlesungen über der Algebra*, Druck und Verlag von B. G. Teubner, Leipzig, 1869.

**Nevanlinna, F. and Nevanlinna, R.**

- [1922] *Über die Eigenschaften einer analytischer Funktionen in der Umgebung einer singulären Stelle oder Linie*, Acta Soc. Sci. Fenn., 50, 5, 1922, pp. 1–46.

**Nevanlinna, R.**

- [1929] *Über beschränkte analytische Funktionen*, Ann. Acad. Sci. Fenn., 32 (Lindelöf-Festschrift), 7, 1929.
- [1970] *Analytic functions*, Die Grundlehren der Mathematischen Wissenschaften in Einzeldarstellungen (translated by Phillip Emig), Springer-Verlag, New York, 1970.

**Nevo, S.**

- [2001a] *Applications of Zalcman's lemma to  $Q_m$ -normal families*, Analysis, 21, 2001, pp. 289–325.
- [2001b] *Normality properties of the family  $\{f(nz): n \in \mathbb{N}\}$* , Comput. Methods Function Theory, 1, 2001, pp. 375–386.
- [2003a] *Generating quasinormal families of arbitrary degree and order*, Analysis, 23, 2003, pp. 125–149.
- [2003b] *Transfinite extension to  $Q_m$ -normality theory*, Results in Mathematics, 44, 2003, pp. 141–156.

**Newton, I.**

- [1687] *Philosophiæ Naturalis Principia Mathematica*, S. Pepys, Societatas Regalis, London, 1987.
- [1713] *Philosophiæ Naturalis Principia Mathematica*, 2nd edition, Cornelius Crawford, Cambridge, 1713.

**Nicoletti, O.**

- [1906] *Sulla teoria dell' iterazione*, Mem. Soc. It. Sci., (3), 14, 1906, pp. 181–257.
- [1907] *Sulla teoria della convergenza degli algoritmi di iterazione*, Annali di Mat., (3), 14, 1907, pp. 1–32.
- [1917] *Su una classé di algoritmi di iterazione per l'approssimazione degli irrazionali quadratici*, Rend. Circ. Mat. Palermo, 42, 1917, pp. 73–79.

**Nikol'skii, S.M.**

- [2005] “The Great Kolmogorov”, transl. by Cooke, R., in *Mathematical events of the twentieth century*, by Bolibruch, A.A., Osipov Yu.S., and Sinai, Ya.G., Springer-Verlag, Berlin, 2005, pp. 283–296.

**Norton, A.V.**

- [1982] *Generation and rendering of geometric fractals in 3-D*, Computer Graphics, 16 (3), 1982, pp. 61–67.
- [1989] *Julia sets in the quaternions*, Computers and Graphics, 13 (2), 1989, pp. 267–278.

**Noshiro, K.**

- [1938] *Contributions to the theory of meromorphic functions in the unit circle*, J. Fac. Sci. Hokkaido Univ., 7, 1938, pp. 149–159.

**Nowicki, T. and van Strien, S.**

- [1994] *Polynomial maps with a Julia set of positive measure*, Stony Brook IMS preprint, #1994/3.

**O'Connor, J.J. and Robertson, E.F.**

- [2010W-a] *Andrey Nikolaevich Kolmogorov*, The MacTutor History of Mathematics archive, <http://www-history.mcs.st-andrews.ac.uk/Biographies/Kolmogorov.html>
- [2010W-b] *Jürgen Moser*, The MacTutor History of Mathematics archive, [http://www-history.mcs.st-and.ac.uk/Biographies/Moser\\\_Jurgen.html](http://www-history.mcs.st-and.ac.uk/Biographies/Moser\_Jurgen.html)
- [2010W-c] *Kiyoshi Oka*, The MacTutor History of Mathematics archive, <http://www-history.mcs.st-andrews.ac.uk/Biographies/Oka.html>

**Oka, K.**

- [1919-29-W] Unpublished writings, <http://www.lib.nara-wu.ac.jp/oka/moku/moku19.html>, 1919–1929.

- [1930-34-W] Unpublished writings, <http://www.lib.nara-wu.ac.jp/oka/moku/moku19.html>, 1930–1934.
- [1930-W] *Fonctions algébriques permutables avec une fonction rationnelle non-linéaire*, unpublished, <http://www.lib.nara-wu.ac.jp/oka/ikou/s19/p000-1.html>, 1930.
- Oka, K., Cartan, H.P., Remmert, R., and Narasimhan, R.**
- [1984] *Kiyoshi Oka, Collected Papers*, Springer-Verlag, Berlin, 1984.
- Osgood, W.F.**
- [1900] *On the existence of Green's function for the most general simply connected plane regions*, Trans. AMS, I, 1900, pp. 310–314.
- Oshkin, I.B.**
- [1982] *On a test of the normality of families of holomorphic functions*, Uspekhi Mat. Nauk, 37, 2, 1982, pp. 221–222.
- Ostrowski, A.**
- [1922] *Über vollständige Gebiete gleichmässiger Konvergenz von Folgen analytischer Funktionen*, Hamb. Abh., 1, 1922, pp. 327–350.
- [1925] *Über Folgen analytischer Funktionen und einige Verschärfungen des Picardschen Satzes*, Math. Zeitschrift, 24, 1925, pp. 215–258.
- [1931] *Studien über den Schottkyschen Satz*, Rektoratsprogramm der Universität Basel für das Jahr 1931. IV + 111 S. Basel, F. Reinhardt, 1931.
- [1934] *Bemerkung zu meiner Abhandlung: Über Folgen analytischer Funktionen und einige Verschärfungen des Picardschen Satzes*, Math. Zeitschrift, 38, 1934, p. 642.
- Outler, A.C.**
- [2006] *Augustine: Confessions and Enchiridion*, Westminster John Knox Press, Louisville, Kentucky, 2006.
- Oya, Shin'ichi**
- [1983] *Japanese mathematics during the last 100 years*, Volume 1, Iwanami Shoten, Tokyo, 1983 (in Japanese).
- Painlevé, P.**
- [1887] *Sur les lignes singulières des fonctions analytiques*, Thesis, Paris, 4°, 1887.
- [1897] *Leçons sur la théorie analytique des équations différentielles professées à Stockholm (Septembre, Octobre, Novembre 1895) sur l'invitation de S. M. le Roi de Suède et de Norwège*, Paris: A. Hermann. 19 + 6 + 589 S., 4°, lith., 1897.
- [1898] *Sur la représentation des fonctions analytiques uniformes*, C.R. Acad. Sci. Paris, 126, 1898, pp. 200–202.
- [1907] *Report of Fatou's thesis*, February 17<sup>th</sup> 1907, Ser. AJ<sup>16</sup> 5539 des Centre Historique des Archives Nationales, Paris.
- Pang, X.**
- [1989] *Bloch's principle and normal criterion*, Science in China, 32, 1989, pp. 782–791.
- [1990] *On normal criterion of meromorphic functions*, Science in China, 33, 1990, pp. 521–527.
- Pang, X., Nevo S., and Zalcman, L.**
- [2005] *Quasi-normal families of meromorphic functions*, Rev. Mat. Iberoamericana, 21, no. 1, 2005, pp. 249–262.
- Parshall, K. and Rowe, D.**
- [1994] *The emergence of the American mathematical research community, 1876–1900: J. J. Sylvester, Felix Klein and E. H. Moore*, History of Mathematics, AMS and LMS, 1994.

- Peitgen, H.-O. and Richter, P.**  
 [1986] *The beauty of fractals*, Springer-Verlag, Berlin, 1986.
- Peitgen, H.-O., Richter, P. and Saupe, D.**  
 [2004] *Chaos and fractals*, Springer-Verlag, New York, 2004.
- Peitgen, H.-O. and Saupe, D.**  
 [1988] *The Science of Fractal Images*, Heinz-Otto Peitgen and Dietmar Saupe, eds., Springer-Verlag, New York, 1988.
- Pelles, D.A.**  
 [1974] *Iteration of endomorphisms of  $P^n(C)$* , Univ. of North Carolina (mimeographed).
- Pérès, J.**  
 [1913] *Détermination de toutes les fonctions permutables de première espèce avec une fonction donnée*, C.R. Acad. Sci. Paris, 156, 1913, pp. 378–381.
- Pérez, R.**  
 [2011] *A brief but historic article of Siegel*, Notices AMS, 58, 2011, pp. 558–566.
- Pérez-Marco, R.**  
 [1992] *Solution complète au problème de Siegel de linéarisation d'une application holomorphe au voisinage d'un point fixe (d'après J.Ch. Yoccoz)*, Sem. Bourbaki, 753: Astérisque: 206, 1992, pp. 273–310.  
 [1995a] *Sur une question de Dulac et Fatou*, C.R. Acad. Sci. Paris, 321, I, 1995, pp. 1045–1048.  
 [1995b] *Non linearizable holomorphic dynamics having an uncountable number of symmetries*, Invent. Math., 119, 1995, pp. 67–127.  
 [1997] *Fixed points and circle maps*, Acta Math., 179, 1997, pp. 243–294.
- Petek, P.**  
 [1997] *Circles and periodic points in the quaternionic Julia sets*, Open Sys. Informat. Dyn., 4, 1997, pp. 487–492.
- Petracovici, L.**  
 [2006] *Non-Accessible critical points of certain rational functions with Cremer points*, Ann. Acad. Sci. Fenn. Math., 31, 2006, pp. 3–11.
- Pettoello, R.**  
 [1994] *Bernhard Riemann: Sulle ipotesi che stanno alla base della geometria e altri scritti scientifici e filosofici*, Universale Bollati Boringhieri, Torino, Italy, 1994.
- Pfeiffer, G.A.**  
 [1915a] *On the conformal geometry of analytic arcs*, Amer. J. Math., 37, 1915, pp. 395–430.  
 [1915b] *On the conformal geometry of analytic arcs*, Bull. AMS, 21, 1915 p. 163.  
 [1916a] *On the conformal map of curvilinear angles*, Bull. AMS, 22, 1916, p. 491.  
 [1916b] *Existence of divergent solutions of the functional equations  $\Phi[g(x)] = a\Phi(x)$ ,  $f[f(x)] = g(x)$ , where  $g(x)$  is a given analytic map, in the irrational case*, Bull. AMS, 22, 1916, p. 163.  
 [1917] *On the conformal mapping of curvilinear angles. The functional equation  $\Phi[f(x)] = a_1\Phi(x)$* , Trans. AMS, 18, 1917, pp. 185–198.  
 [1918] *The functional equation  $f[f(x)] = g(x)$* , Ann. Math., (2), 20, 1918, pp. 13–22.
- Phili, Ch.**  
 [2003] *Reflexions of Picard's theorem and Monge's problem on two Greek mathematicians: G. Remoundos and P. Zervos*, Acta Hist. Naturalium Necnon Technicarum, New Ser., 7, 2003, pp. 95–117.

**Picard, É.**

- [1878] *Sur la forme des intégrales des équations différentielles du second ordre dans le voisinage de certains points critiques*, C.R. Acad. Sci. Paris, 87, 1878, pp. 430–432, pp. 743–745.
- [1879] *Sur les fonctions entières*, C.R. Acad. Sci. Paris, 89, 1879, pp. 662–665.
- [1881] *Sur la décomposition en facteurs primaires des fonctions uniformes ayant une ligne de points singuliers essentiels*, C.R. Acad. Sci. Paris, 92, 1881, pp. 690–692.
- [1884] *Sur la forme des intégrales des équations différentielles du premier ordre dans le voisinage de certains points critiques*, Bull. SMF, XII, 1884, pp. 48–51.
- [1887] *Report of Painlevé's thesis*, January 4<sup>th</sup> 1887, Ser. AJ<sup>16</sup> 5534 des Archives Nationales.
- [1892] *Report of Hadamard's thesis*, May 18<sup>th</sup> 1892, Ser. AJ<sup>16</sup> 5535 des Archives Nationales.
- [1896] *Traité d'analyse*, Tome III, Gauthier-Villars, Paris, 1896.
- [1900] *Sur une classe de surfaces algébriques dont les coordonnées s'expriment par les fonctions uniformes des deux paramètres*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 28, 1900, pp. 17–25.
- [1904] *Sur certaines équations fonctionnelles et sur une classe de surfaces algébriques*, C.R. Acad. Sci. Paris, 139, 1904, pp. 5–9.
- [1905] *Traité d'analyse*, Tome II, 2<sup>nd</sup> edition, Gauthier-Villars, 8°, 1905.
- [1908] *Traité d'Analyse*, Tome III, Gauthier-Villars, Paris, 1908.
- [1913] *Sur une classe de transcendentes*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 30, 1913, pp. 247–253.
- [1917] *Notice Historique sur Gaston Darboux*, Gauthier-Villars, Paris, 1917.
- [1926] *La vie et l'œuvre de Jules Tannery*, Mémoires de l'Académie des Sciences, T. 58, 1926, pp. I–XXXII.

**Pierpont, J.**

- [1900] *Mathematical instruction in France*, Bull. AMS, 6, 1900, pp. 225–249.

**Pincherle, S.**

- [1880] *Saggio di una introduzione alla teoria delle funzioni analitiche secondo i principi del Prof. Weierstrass*, Giornale di Mat. 18, 1880, pp. 178–254; pp. 317–357.
- [1894-95] *Sulle operazioni distributive commutabili con una operazione data*, Atti Reale Accad. Sci. Torino, 30 (1894–1895), pp. 820–844.
- [1896a] *Della validità effettiva di alcuni sviluppi in serie di funzioni*, Atti Reale Accad. Lincei, Cl. Sc. Fis. Mat. Nat., Roma, (5), 5, 1896, pp. 27–33.
- [1896b] *Le operazioni distributive e le omografie*, Reale Istit. Lombardo Scienze e Lettere, Classe Scienze Fisiche, Matematiche e Naturali, Milano, (2), 29, 1896, pp. 397–405.
- [1896c] *Operazioni distributive: le equazioni differenziali non omogenee*, Atti Reale Accad. Lincei, Rend. Cl. Sc. Fis. Mat. Nat., Roma, (5), 5, 1896, pp. 301–306.
- [1897a] *Cenno sulla geometria dello Spazio funzionale*, Rend. Reale Accad. Sci. Institut. Bologna (Nuova Serie), 1, 1896–1897, pp. 85–95.
- [1897b] *Sulla generalizzazione del determinante wronskiano*, Atti Reale Accad. Lincei, Rend. Cl. Sc. Fis. Mat. Nat., Roma, (5), 6, 1897, pp. 301–307.
- [1906] *Funktionaloperationen und Gleichungen* from *Encyklopädie der Mathematischen Wissenschaften*, Volume II, A, §11, Teubner, Leipzig, 1906, pp. 761–817.
- [1912] *Equations et opérations fonctionnelles* from *Encyclopédie des sciences mathématiques pures et appliquées*, Volume V, Book II, §26, Gauthier-Villars, Paris, 1912, , pp. 1–81.
- [1914] *Alcune osservazioni sulla iterata di una funzione data*, Rend. Reale Accad. Sci. Institut. Bologna (Nuova Serie), 18, (1913–1914), pp. 75–88.
- [1916] *Sopra alcuni nuclei analitici*, Rend. Reale Accad. Sci. Institut. Bologna (Nuova Serie), 20, (1915–1916), pp. 85–100.
- [1917a] *Appunti su alcuni problemi di iterazione*, Rend. Reale Accad. Sci. Institut. Bologna (Nuova Serie), 21, (1916–1917), pp. 86–97.
- [1917b] *Sur l'itération de la substitution  $x^2 - a$* , submission to French Academy of Sciences for its 1918 *Grand Prix des Sciences Mathématiques*, 1917.
- [1918a] *Sulle catene di radicali quadratici*, Atti Reale Accad. Torino, 53, 1918, pp. 745–763.
- [1918b] *Sulle catene di radicali quadratici*, Atti Reale Accad. Bologna, 53, 1918, pp. 437–455.

- [1918c] *Sulle radici reali delle equazioni iterate di una equazione quadratica*, Rend. Accad. Lincei Roma, (5), 27, 1918m pp. 177-18.
- [1918d] *Sull' iterazione della funzione  $x^2 - a$* , Rend. Accad. Lincei Roma, (5), 27, 2, 1918, pp. 337-343.
- [1919] *Un teorema sull' iterazione della funzione quadratica*, Rend. Reale Accad. Sci. Instit. Bologna (Nuova Serie), 23, 1918-1919, pp. 65-70.
- [1920a] *L' iterazione completa di  $x^2 - 2$* , Rend. Accad. Lincei Roma, (5), 27, 1920, pp. 329-333.
- [1920b] *Sulla funzione iterata di una razionale intera*, Rend. Accad. Lincei Roma, (5), 29, 1, 1920, pp. 403-407.
- [1920c] *Sopra alcune equazioni funzionali*, Rend. Accad. Lincei Roma, (5), 29, 2, 1920, pp. 279-281.
- [1925] *Notice sur les travaux*, Acta. Math., 46, 1925, pp. 341-362.

#### Plantefol, L.

- [1961] *Allocution to Julia*, in Julia's Œuvres, VI, Gauthier-Villars, Paris, 1970, pp. 309-315.

#### Podetti, F.

- [1897] *Sulle sostituzioni uniformi*, Giornale di Battaglini, 35, 1897, pp. 264-266.

#### Poincaré, H.

- [1879] *Sur les propriétés des fonctions définies par les équations différentielles aux différences partielles*, Thesis presented to the Faculty of Sciences in Paris, August 1<sup>st</sup> 1879, Gauthier-Villars, Paris, = *Œuvres*, I, pp. XLIX-CXXIX.
- [1881-82] *Mémoire sur les courbes définies par une équation différentielle*, Résal J., (3), VII, 1881, pp. 375-422; (3) VIII, 1882, pp. 251-296 = *Œuvres*, I, pp. 3-44, 44-84.
- [1883a] *Sur un théorème général des fonctions*, Bull. SMF, 11, 1883, pp. 112-125 = *Œuvres*, IV, pp. 57-69.
- [1883b] *Mémoire sur les groupes Kleiniéens*, Acta Math., III, 1883, pp. 49-92 = *Œuvres*, II, pp. 258-299.
- [1884] *Sur les groupes des équations linéaires*, Acta Math., IV, 1884, pp. 201-312 = *Œuvres*, II, pp. 300-401.
- [1885] *Sur les courbes définies par les équations différentielles*, Jordan J., (4), I, 1885, pp. 167-244 = *Œuvres*, I, pp. 90-161.
- [1886] *Sur les courbes définies par une équation différentielle*, J. Math. Pures Appl., Quatrième Partie, 4, 2, 1886, pp. 151-217 = *Œuvres*, I, pp. 167-222.
- [1890a] *Sur une classe nouvelle de transcendentes uniformes*, J. Math. Pures Appl., 6, 4, 1890, pp. 313-365 = *Œuvres*, IV, pp. 537-582.
- [1890b] *Sur le problème des trois corps et les équations de la dynamique*, Acta Math., XIII, 1890, pp. 1-270 = *Œuvres*, VII, pp. 262-479.
- [1892a] *Les méthodes nouvelles de la mécanique céleste. Tome I. Solutions périodiques. Non-existence des intégrales uniformes. Solutions asymptotiques.*, Gauthier-Villars et Fils., Paris, 8°, 1892, pp. 385.
- [1892b] *Sur les fonctions à espaces lacunaires*, Amer. J. Math., 14, 1892, pp. 201-221 = *Œuvres*, IV, pp. 36-55.
- [1893] *Les méthodes nouvelles de la mécanique céleste. Tome II.* Gauthier-Villars et Fils, 1893.
- [1899b] *Les méthodes nouvelles de la mécanique céleste, Tome III*, Gauthier-Villars et Fils., Paris, 8°, 1899.
- [1908] *Sur l'uniformisation des fonctions analytiques*, Acta Math., 31, 1908, pp. 1-64 = *Œuvres*, IV, pp. 70-139.
- [1921] *Analyse de ses travaux scientifiques*, Acta Math., 38, 1921, pp. 36-135.
- [1915-1956] *Œuvres de Henri Poincaré*, 11 Volumes, Gauthier-Villars, Paris, 1915-1956.

#### Pólya, G.

- [1927] *Sur les fonctions entières à série lacunaire*, C.R. Acad. Sci. Paris, 184, 1927, pp. 1526-1528.

**Pólya, G. and Hurwitz, A.**

- [1916] *Zwei Beweise eines von Herrn Fatou vermuteten*, Acta. Math. 40, 1916, pp. 179–183.

**Pommerenke, Ch.**

- [1981] *On asymptotic iteration of analytic functions in the disk*, Analysis, 1, 1981, pp. 45–61.

**Pompeo Faracovi, O.**

- [2002] *Enriques e Severi: Matematici a confronto nella cultura del novecento*, Atti del Congresso di Livorno 24–25 Ottobre 2002, Agor Edizioni, 2004.

**Poon, K.K. and Yang, C.C.**

- [1988] *Dynamical behavior of two permutable entire functions*, Ann. Polon. Math., 68, 1988, pp. 159–163.

**Pringsheim, A.**

- [1890] *Allgemeine Theorie der Divergenz und Convergenz von Reihen mit positiven Gliedern*, Math. Ann., 35, 1890, pp. 297–394.
- [1893] *Zur Theorie der Taylor'schen Reihe und der analytischen Funktionen mit beschränktem Existenzbereich*, Math. Ann., 42, 1893, pp. 153–184.
- [1894a] *Ueber die notwendigen und hinreichenden Bedingungen des Taylor'schen Lehrsatzes für Funktionen einer reellen Variablen*, Math. Ann., 44, 1894, pp. 57–82.
- [1894b] *Ueber Funktionen, welche in gewissen Punkten endliche Differentialquotienten jeder endlichen Ordnung, aber keine Taylorsche Reihenentwicklung besitzen*, Math. Ann., 49, 1894, pp. 41–56.

**Rådström, H.**

- [1953] *On the iteration of analytic functions*, Math. Scand. 1, 1953, 85–92.

**Rassias, T.M.**

- [2004] *The Greek Mathematical Society*, EMS Newsletter, 2004, pp. 34–35.

**Rausenberger, O.**

- [1881] *Theorie der allgemeinen Periodicität*, Klein Ann., XVIII, 1881, pp. 379–410.

**Reich, S.**

- [1985] *Averaged mappings in the Hilbert ball*, J. Math. Appl. Math., 109, 1985, pp. 199–206.
- [1991] *The asymptotic behavior of a class of nonlinear semigroups in the Hilbert ball*, J. Math. Anal. Appl., 157, 1991, pp. 237–242.

**Reich, S. and Shoikhet, D.**

- [1996] *Generation theory for semigroups of holomorphic mappings in Banach spaces*, Abstr. Appl. Analysis, 1, 1996, pp. 1–44.
- [1997a] *Semigroups and generators on convex domain with the hyperbolic metric*, Atti Accad. Naz. Lincei, 8, 1997, pp. 231–250.
- [1997b] *The Denjoy-Wolff theorem*, Proc. Workshop of Fixed Point Theory, Ann. Univ. Mariae Curie-Sklodowska Sect., A, 51, 1997, pp. 219–240.
- [2001] *The Denjoy-Wolff Theorem*, Encyclopedia of Mathematics, Suppl. III, Kluwer Academic Publishers, Dordrecht, 2001, pp. 121–123.

**Reichenbächer, E.**

- [1908] *Über das Iterationsproblem*, Zs. f. Math. Naturw. Unterr., 39, 1908, pp. 233–246.

**Reidemeister, M.**

- [1926a] *Elementare Begründung der Knotentheorie*, Abhandlungen Hamburg, 5, 1926, pp. 24–32.
- [1926b] *Knoten und Gruppen*, Abhandlungen Hamburg, 5, 1926, pp. 7–23.
- [1928] *Über Knotengruppen*, Abhandlungen Hamburg, 6, 1928, pp. 56–64.



**Remmert, R.**

- [1990] *Theory of complex functions*, Springer-Verlag, 1990.  
 [1997] *Classical topics in complex function theory*, Springer-Verlag, New York, 1997.  
 [1998] *From Riemann surfaces to complex spaces*, Séminaires et Congrès SMF, 3, 1998

**Remoundos, G.J.**

- [1903] *Une nouvelle généralisation du théorème de M. Picard sur les fonctions entières*, C.R. Acad. Sci. Paris, 136, 1903, pp. 953–955.  
 [1905] *Sur le cas d'exception de M. Picard et les fonctions multiformes*, Bull. SMF, 33, 1905, pp. 191–201.  
 [1906] *Sur les zéros d'une class de fonctions transcendantes*, Ann. Fac. Sci. Toulouse, Ser. 2, 9, 1906, pp. 1–72.  
 [1907] *Sur les points critiques d'une classe de fonctions*, C.R. Acad. Sci. Paris, 144, 1907, pp. 65–67.  
 [1913a] *Le théorème de M. Picard dans un cercle dont le centre est un point critique algébrique*, C.R. Acad. Sci. Paris, 167, 1913, pp. 694–697.  
 [1913b] *Sur les familles de fonctions multiformes admettant des valeurs exceptionnelles dans un domaine*, C.R. Acad. Sci. Paris, 167, 1913, pp. 542–545.  
 [1914a] *Sur les séries de fonctions multiformes dans un domaine*, C.R. Acad. Sci. Paris, 158, 1914, pp. 929–932.  
 [1914b] *Sur la convergence des séries de fonctions analytiques*, C.R. Acad. Sci. Paris, 158, 1914, pp. 248–250.  
 [1915] *Sur les familles et les séries de fonctions multiformes dans un domaine*, Annali di Mat., (3), 23, 1915, pp. 1–24.  
 [1917] *Sur la classification des points transcendants des inverses des fonctions entières ou méromorphes*, C.R. Acad. Sci. Paris, 165, 1917, pp. 331–334.  
 [1923] *Sur l'itération des fonctions multiformes*, C.R. Acad. Sci. Paris, 176, 1923, pp. 274–275.  
 [1927] *Extensions aux fonctions algébroides multiformes du théorème de M. Picard et des généralisations*, Gauthier-Villars, Paris, 1927.

**Rempe, L.**

- [2003] *Dynamics of Exponential Maps*, doctoral dissertation, Christian-Albrechts-Universität Kiel, 2003.  
 [2007] *On nonlanding dynamic rays of exponential maps*, Ann. Acad. Sci. Fenn., 32, 2007, pp. 353–369.

**von Renteln, M.**

- [1992] *Des Einflußder Lebesgueschen Integrationstheorie auf die komplexe Funktionentheorie zu Beginn dieses Jahrhunderts*, in Jahrbuch Äberblicke Mathematik, 1992 (Braunschweig, 1992), pp. 75–96.

**Richardson, J.**

- [1991] *Visualizing quantum scattering on the CM-2 supercomputer*, Comp. Phys. Comm., **63**, 1-3, 1991, pp. 84–94.

**Riemann, B.**

- [1859] *Über die Anzahl der Primzahlen unter einer gegebenen Grösse*, Monatsberichte Berl. Akad., 1859.  
 [1898] *Œuvres mathématiques. Traduites par L. Laugel. Avec une préface par Hermite et un discours par F. Klein*, Gauthier-Villars, Paris, 1898, XXXV + 953 p. gr. 8°.

**Riesz, F. and Riesz, M.**

- [1916] *Ueber die Randwerte einer Analytischen Funktion*, 4° Congress of Scandinavian Mathematicians, Stockholm, 1916, pp. 27–44.

**Rippon, P. and Stallard, G.**

- [2005] *On questions of Fatou and Eremenko*, manuscript, Proc. AMS, Vol. 133, 4, 2005, pp. 1119–1126.

**Rippon, P. and Stallard, G., eds.**

- [2008] *Transcendental dynamics and complex analysis: a tribute to Noel Baker*, Cambridge University Press, 2008, pp. IX–XIX.

**Ritt, J.F.**

- [1915] *On certain real solutions of Babbage's functional equation*, Annals of Maths, Ser. 2, 17, 1915, pp. 113–123.
- [1918a] *Sur l'itération des fonctions rationnelles*, C.R. Acad. Sci. Paris, 166, 1918, pp. 380–381.
- [1918b] *Polynomials with a common iterate*, Bull. AMS, 24, 1918, pp. 374.
- [1918c] *On the iteration of polynomials*, Bull. AMS, 24, 1918, p. 467.
- [1920] *On the iteration of rational functions*, Trans. AMS, 21, 1920, pp. 348–356.
- [1921] *On the conformal mapping of a region into a part of itself*, Annals of Maths, Ser. 2, 22, 1921, pp. 157–160.
- [1922] *Prime and composite polynomials*, Trans. AMS, 23, 1922, pp. 51–66.
- [1923a] *Permutable rational maps*, Bull. AMS, 29, 1923, p. 147.
- [1923b] *Sur les fonctions rationnelles permutable*, C.R. Acad. Sci. Paris, 176, 1923, pp. 60–61.
- [1923c] *Permutable rational functions*, Trans. AMS, 25, 1923, pp. 399–448.
- [1924] *Equivalent rational substitutions*, Trans. AMS, 25, 1924, pp. 221–229.

**Rosa, A.**

- [2004] *Inwards to chaos and complex mapper: two graphical interfaces for simulations in complex analysis and dynamics*, Electronic J. Diff. Eq. Control Proc., St. Petersburg, Russia, 3, 2004.
- [2005a] *Hommage à Gaston Julia (1893–1978)*, Quadrature, 58, 2005.
- [2005b] *Advanced graphics in complex analysis and dynamics*, Electronic J. Diff. Eq. Control Proc., 1, 2005.
- [2005c] *Methods and applications to display quaternion Julia sets*, Electronic J. Diff. Eq. Control Proc., St. Petersburg, 4, 2005.
- [2006] *On the digital visualization of hedgehogs in holomorphic dynamics*, Electronic J. Diff. Eq. and Control Proc., St. Petersburg, Russia, 1, 2007, pp. 1–36.

**Rosa, A. and Alexander, D.S.**

- [prep] *A history of graphical iteration*, in preparation.

**Rosay, J.P. and Rudin, W.**

- [1988] *Holomorphic maps from  $\mathbb{C}^n$  to  $\mathbb{C}^n$* , Trans. AMS, 310, 1988, 1, pp. 47–86.

**Rosenbloom, P.C.**

- [1948] *L'itération des fonctions entières*, C. R. Acad. Sci. Paris, 227, 1948, pp. 382–383.
- [1952] *The fixed points of entire functions*, Medd. Lunds. Univ. Mat. Sem., Tome Suppl. 1952, pp. 186–192.

**Rothman, T.**

- [1982] *Genius and biographers: The fictionalization of Evariste Galois*, Amer. Math. Monthly, 1982, pp. 89–84.

**Rottenfuß, G. and Schleicher, D.**

- [2008] *Escaping points of cosine maps*, in *Transcendental dynamics and complex analysis: a tribute to Noel Baker*, P. Rippon and G. Stallard, eds., 2008, Cambridge University Press, pp. 396–424.

**Rottenfuß, G., Rückert, J., Rempe, L., and Schleicher, D.**

- [2011] *Dynamic Rays of Entire Functions*, Annals of Math., to appear.

- Rouche, N., Habets, P. and Laloy, M.**  
 [1977] *Stability theory by Liapunov's direct method*, Applied Mathematical Series, 22, Springer-Verlag, New York, 1977.
- Rubel, L.**  
 [1986] *Four counter-examples to Bloch's principle*, Proc. AMS, 98, 1986, pp. 257–260.
- Rudin, W.**  
 [1980] *Function theory in the unit ball of  $\mathbb{C}^n$* , Classics in Mathematics, Springer-Verlag, Berlin, 1980.
- Runge, C.**  
 [1885] *Zur Theorie der eindeutigen analytischen Functionen*, Acta Math., VI, 1885, pp. 229–244.
- Rußman, H.**  
 [1983] *Das Werk C. L. Siegels in der Funktionentheorie*, Jahresbericht DMV, 85, 1983, pp. 174–200.
- Sandin, D.J. and Kauffman, L.H.**  
 [2004] *A ray tracer to visualize higher dimensional Julia sets*, Proc. of the Fifth Interdisciplinary Conference of The International Society of The Arts, Mathematics, and Architecture, Chicago, 2004.
- Salet, P.**  
 [1927] *Omar Khayyam, savant et philosophe*, Maisonneuve Frères, Paris, 1927.
- Salomon-Bayet, C.**  
 [1978] *L'institution de la Science et l'expérience du vivant. Méthode et expérience à l'Académie Royale des Sciences 1666–1793*, Ed. Flammarion, Champs Sciences, Paris, 1978.
- Sarason, D.**  
 [1988] *Angular derivatives via Hilbert space*, Complex Variables Theory Appl., 10, 1988, pp. 1–10.
- Saunders, E.S.**  
 [1978] *The Archives of the Academy of Sciences*, French Historical Studies, 10, No. 4., 1978, pp. 696–702.
- Saxer, W.**  
 [1928a] *Über quasi-normale Funktionsscharen und eine Verschärfung des Picardschen Satzes*, Math. Ann., 99, 1928, pp. 707–737.  
 [1928b] *Sur la structure des familles normales de fonctions méromorphes*, C.R. Acad. Sci. Paris, 187, 1928, pp. 752–754.  
 [1930] *Über konvergente Folgen meromorpher Funktionen*, Comment. Math. Helvetici, 2, 1930, pp. 18–34.
- Schapira, H.**  
 [1887a] *Bemerkungen zu der Grenzfunction algebraischer Iterationen*, Schlömilch. Z., XXXII, 1887, pp. 310–314.  
 [1887b] *Ueber ein allgemeines Princip algebraischer Iterationen*, Vortrag. Heidelberg, 1887, 24 pp.
- Schiff, J.L.**  
 [1993] *Normal families*, Universitext, Springer-Verlag, New York, 1993.

**Schleicher, D.**

- [1998] *Dynamics of entire functions*, in, *Holomorphic dynamical systems*, Graziano Gentili, Jacques Guenot, and Giorgio Patrizio, eds., Lecture Notes in Math., Springer-Verlag Berlin, 1988, pp. 295–339.
- [2007a] *The dynamical fine structure of iterated cosine maps and a dimension paradox*, Duke Math. J., Vol. 136, No. 2, 2007, pp. 343–356.
- [2007b] *Hausdorff dimension, its properties, and its surprises*. Amer. Math. Monthly, 114, 6, 2007, pp. 509–528.

**Schleicher, D. and Zimmer, J.**

- [2003] *Escaping points of exponential maps*, J. LMS, 67, 2003, pp. 380–400.

**Schmidt, W.**

- [1992] *On the periodic stable domains of permutable rational functions*, Complex Variables, 17, 1992, pp. 149–152.

**Schmidt, W. and Steinmetz, N.**

- [1995] *The polynomials associated with a Julia set*, Bull. LMS, 27, 1995, pp. 239–241.

**Schönflies, A.**

- [1908] *Die Entwicklung der Lehre von den Punktmannigfaltigkeiten, II*, Bericht erstattet der Deutschen Mathematiker-Vereinigung (Report to the German Math. Soc.), Teubner, Leipzig, 1908.

**Schröder, E.**

- [1870] *Über unendlich viele Algorithmen zur Auflösung der Gleichungen*, Math. Ann., 2, 1870, pp. 317–365.
- [1871] *Über iterirte Funktionen*, Math. Ann., 3, 1871, pp. 296–322.

**Schwarz, H.A.**

- [1890] *Gesammelte mathematische Abhandlungen, II*, Springer-Verlag, Berlin, 1890.

**Schwick, W.**

- [1989] *Normality criteria for families of meromorphic functions*, J. Analyse Math., 52, 1989, pp. 241–289.
- [1997] *Repelling periodic points in the Julia set*, Bull. LMS, 29, 1997, pp. 314–316.

**Segal, S.L.**

- [1981] *Nine introductions in complex analysis*, Mathematical Studies, North Holland, Amsterdam, 1981.
- [2003] *Mathematicians Under the Nazis*, Princeton University Press, 2003.

**Seidel, W. and Littauer, S.B.**

- [1931] *On the lines of Julia of entire functions. I, II*, Bull. AMS, 37, 1931, 816.

**Selmer, E.S.**

- [1991] *Ralph Tambs-Lyche in memoriam*, Normat Nr., 39, (1), 1991, pp. 1–3.

**Serrin, J.**

- [1956] *A note on harmonic function defined in a half-plane*, Duke Math J., 23, 1956, pp. 523–526.

**Severini, C.**

- [1909] *Sulle successioni infinite di funzioni analitiche*, Roma 4th Mathematical Congress, 2, Accad. dei Lincei, Rome, 1909, pp. 183–193.

**Shankar, H., ed.**

- [1970] *Essays dedicated to A. J. Macintyre*, Ohio Univ. Press, Athens, OH, 1970.

**Shapiro, J.H.**

- [1993] *Composition operators and classical function theory*, Universitext: Tracts in Mathematics, Springer-Verlag, New York, 1993.

**Shimizu, T.**

- [1931a] *On the iterations of algebraic functions I*, Proc. Phys.-Math. Soc. Japan, III, Ser. 13, 1931, pp. 255–266.  
 [1931b] *On the iterations of algebraic functions II*, Proc. Phys.-Math. Soc. Japan, III, Ser. 13, 1931, pp. 292–296.

**Shishikura, M.**

- [1987] *On the quasiconformal surgery of rational functions*, Ann. Sci. Éc. Norm. Sup., 20, 1987, pp. 1–20.

**Shoikhet, D.**

- [2001] *Semigroups in geometrical function theory*, Kluwer Academic Publishers, Dordrecht, 2001.

**Siegel, C.L.**

- [1941] *On the integrals of canonical systems*, Annals of Math., 42, 1941, pp. 806–822.  
 [1942] *Iterations of analytic functions*, Annals of Math., 43, 1942, pp. 607–612.  
 [1977] *On the history of the Frankfurt Mathematics Seminar*, Math. Intelligencer, 1, 4, 1977, pp. 223–230.

**Siegmund-Schultze, R.**

- [2003] *The origins of functional analysis*, in *A History of Analysis*, H. N. Jahnke, History of Mathematics, 24, AMS-LMS, 2003, pp. 385–404.  
 [2004] *The ideology of applied mathematics within mathematics in Germany and the U.S. until the end of World War II*, Lull ISSN 0210–8615, 2004, Vol. 27, 60, pp. 791–811.

**Sintzow (Sintsov), D.**

- [1904] Review of *The principal laws of convergence of iterates and their application to analysis* by L. Böttcher, JFM, 35.0398, 1904. See Böttcher [1904b].

**Smith, H.J.S.**

- [1875] *On the integration of discontinuous functions*, Proc. LMS, 6, 1875, pp. 140–153.

**Société de Mathématiques de France (publisher)**

- [1905] *Vie de la Société*, Astérisque, Bull. SMF, 33, 1905.  
 [1906] *Vie de la Société*, Astérisque, Bull. SMF, 34, 1906.  
 [1907] *Vie de la Société*, Astérisque, Bull. SMF, 35, 1907.  
 [1908] *Vie de la Société*, Astérisque, Bull. SMF, 36, 1908.  
 [1913] *Vie de la Société*, Astérisque, Bull. SMF, 41, 1913.  
 [1915] *Vie de la Société*, Astérisque, Bull. SMF, 43, 1915, pp. 1–25.  
 [1916] *Vie de la Société*, Astérisque, Bull. SMF, 44, 1916, pp. 1–36.  
 [1917] *Vie de la Société*, Astérisque, Bull. SMF, 45, 1917, pp. 1–19.  
 [1918] *Vie de la Société*, Astérisque, Bull. SMF, 46, 1918, pp. 1–38.  
 [1919] *Vie de la Société*, Astérisque, Bull. SMF, 47, 1919, pp. 1–50.  
 [1920] *Vie de la Société*, Astérisque, Bull. SMF, 48, 1920, pp. 1–54.  
 [1929] *Vie de la Société*, Astérisque, Bull. SMF, 57, 1929, pp. 1–24, supplément spécial.  
 [1942] *Arnaud Denjoy – Évocation de l'homme et de l'œuvre*, Astérisque SMF, 1975, pp. 28–29.

**Spiess, O.**

- [1902] *Die Grundbegriffe der Iterationsrechnung*, Bern. Mitt., pp. 106–137; sep. Basel. 34 S. 8°, 1902.

- [1906] *Theorie der linearen Iteralgleichung mit konstanten Koeffizienten*, Math. Ann. 62, 1906, pp. 226–252.
- Stachura, A.**
- [1985] *Iterates of holomorphic self-maps of the unit ball in Hilbert spaces*, Proc. AMS, 93, 1985, pp. 88–90.
- Stavinschi M. and Mioc V.**
- [2005] *Astronomical researches in Poincaré's and Romanian works*, Journées 2004 - systèmes de référence spatio-temporels, Observatoire de Paris, Paris, September 2005, pp. 155–156.
- Stefanescu, D.**
- [2005] *Bull. Mathématique—A brief history*, Bull. Soc. Sci. Math. Roumanie, 48(96), 1/2005, pp. 1–4.
- Steinmetz, N.**
- [1993] *Rational Iteration: Complex Analytic Rational Systems*, de Gruyter Studies in Mathematics, de Gruyter, Berlin, 1993.
- Sternberg, S.**
- [1969] *Celestial mechanics*, Part II, Mathematics Lecture Note Series, Benjamin, New York, 1969.
- Stewart, G.**
- [1993] *Infinitely many algorithms for solving equations*, Computer Science Technical Report Series, Vol. CS-TR-2990, 1993. Translation of E. Schröder's *Über unendlich viele Algorithmen zur Auflösung der Gleichungen*. See Schröder [1870].
- Sugiyama, H.**
- [1994] *A sketch of the life of Dr. Shimizu*, Mathematica Japonicæ, Vol. 40, No. 1, 66, 1994, p. 2.
- Sullivan, D.**
- [1985] *Quasi-conformal homeomorphisms and dynamics I: Solution of the Fatou-Julia problem on wandering domains*, Ann. Maths, 122, 1985, pp. 402–418.
- Tambs-Lyche, R.**
- [1927] *Une formule d'itération*, Bull. SMF, 55, 1927, pp. 102–113.
- [1928a] *Sur la convergence de la série  $\sum \binom{n}{r}$* , C.R. Acad. Sci. Paris, 186, 1928, pp. 1810–1812.
- [1928b] *Les fonctions limites d'une fonction à centre*, C.R. Acad. Sci. Paris, 187, 1928, pp. 102–104.
- [1929a] *L'itération de la fonction  $z_1 = sz + z^2$* , Forhandlinger Norske Selskab, 2, 18, 1929, pp. 62–65.
- [1929b] *Remarques sur certains déterminants*, Forhandlinger Norske Selskab 2, 19, 1929, pp. 66–69.
- [1930] *Sur le problème du centre*, VII-th Skand. Matematikerkongress, 1930, pp. 158–169.
- Tan Lei, ed.**
- [2000] *The Mandelbrot Set, Theme and Variations*, LMS Lecture Note Series, Cambridge University Press, 2000.
- Taton, R.**
- [1980] *Gabriel Kœnigs in The Dictionary of Scientific Biography*, Charles Scribner's Sons, Vol. 7, 1980, p. 446.

**Tazzioli, R.**

- [1999] *La matematica all'Università di Catania dall'Unità alla riforma Gentile*, Annali di Storia delle Università Italiane, Vol. 3, 1999.

**Tao, Z.G.**

- [1988] *Julia's lemma for analytic operator functions*, Chinese Ann. Math., Ser. B, 9, 1988, pp. 156–160.

**Thurston, W.**

- [2009] *On the geometry and dynamics of iterated rational maps*, D. Schleicher and N. Selinger, eds., with an appendix by Schleicher, in *Complex Dynamics*, D. Schleicher, ed., A. K. Peters, Wellesley, MA, 2009, pp. 3–137.

**Tonelli, L.**

- [1910a] *Sull' iterazione*, Giornale di Battaglini, 48, (3), 1, 1910, pp. 341–373.  
 [1910b] *Sull' iterazione*, Rend. Accad. Lincei Roma, (6), 19, 1, 1910, pp. 676–681.  
 [1910c] *Su gli zeri del limite di una successione di funzioni analitiche*, Rend. Accad. Lincei Roma, 19, 1, 1910, pp. 5–10.  
 [1937] *Salvatore Pincherle*, Annali della Scuola Normale Superiore di Pisa, Classe di Scienze, 2, t. 6, 1, 1937, pp. 1–10.

**Töpfer, H.**

- [1939] *Über die Iteration der ganzen transzendenten Funktionen insbesondere von  $\sin z$  und  $\cos z$* , Math. Ann., 117, 1939.  
 [1949] *Komplexe Iterationsindizes ganzer und rationaler Funktionen*, Math. Ann., 121, 1949, pp. 191–222.

**Tricomi, F.**

- [1916a] *Un teorema sulla convergenza delle successioni formate delle successive iterate di una funzione di una variabile reale*, Giornale di Battaglini, 54, (3) 7, 1916, pp. 1–9.  
 [1916b] *Sull' iterazione delle funzioni di una variabile complessa*, Rend. Accad. Lincei Roma, (5) 25, 2, 1916, pp. 156–162

**Tschebotarōw, N.**

- [1930] *Bemerkung über analytische Iterationen*, Bull. Soc. Phys.-Math. de Kazan, (3), 4, 1930, pp. 49–50.

**Tucciarone, J.**

- [1973] *The development of the theory of summable divergent series from 1880 to 1925*, Arch. Hist. Exact Sci., Vol 10, number 12, 1973, pp. 1–40.

**Valiron, G.**

- [1913] *Sur les fonctions entières d'ordre nul et d'ordre fini et en particulier les fonctions à correspondance régulière*, Ann. Sci. Fac. Sci. Toulouse, Ser. 3, 9, 1913, pp. 117–257  
 [1920] *Les théorèmes généraux de M. Borel dans la théorie des fonctions entières*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 37, 1920, pp. 219–253.  
 [1925a] *Remarque sur un théorème de M. Julia*, Bull. Soc. Math., (2), 49, 1925, pp. 68–73.  
 [1925b] *Supplément à la note 'Remarque sur un théorème de M. Julia'*, Bull. Soc. Math., (2), 49, 1925, pp. 270–275.  
 [1925c] *Sur les fonctions méromorphes qui sont exceptionnelles relativement au théorème de M. Julia*, C.R. Acad. Sci. Paris, 180, 1925, pp. 1895–1896.  
 [1927] *Compléments au théorème de Picard-Julia*, Bull. Soc. Math., (2), 51, 1927, pp. 167–183.  
 [1928] *Le théorème de M.  $g$  et le complément de M. Julia*, J. Math., (9), 7, 1928, pp. 113–126.  
 [1930] *Sur les familles normales de fonctions analytiques*, Ann. Sci. Éc. Norm. Sup., Ser. 3, 47, 1930, pp. 79–92.  
 [1931] *Sur l'itération des fonctions holomorphes dans un demi-plan*, Bull. Soc. Math., (2), 55, 1931, pp. 105–128.

- [1932] *Le théorème de Borel-Julia dans la théorie des fonctions méromorphes*, Verhandlungen Kongress Zürich, 1, 1932, pp. 270–279.

**Venkatachaliengar, K.**

- [1934] *A note on Julia's lemma*, Mathematics Student 2, 1934, pp. 149–150.

**Viola, T.**

- [1932a] *Sui punti irregolari di una famiglia non normale di funzioni ologomorfe*, Verhandlungen Kongress Zürich, 2, 1932, Orell Füssili, Zürich, pp. 36–37.
- [1932b] *Una proprietà degli aggregati perfetti di punti, utile nello studio delle famiglie non normali di funzioni ologomorfe*, Bollettino U.M.I., 11, 1932, pp. 287–290.
- [1935] *Sulle famiglie di funzioni analitiche ammettenti valori eccezionali e sul comportamento di una funzione uniforme in prossimità di un punto singolare essenziale isolato*, Mem. R. Accad. Italiana, Cl. Sc. Fis. Mat. Nat., 6, 1935, pp. 1293–1307.

**Vitali, G.**

- [1903] *Sopra le serie di funzioni analitiche*, Rendiconti del Real Istituto Lombardo, (2), 36, 1903 and Annali di Mat., (3), 10, 1904.

**Vitushkin, A.G.**

- [2004] *On Hilbert's thirteenth problem and related questions*, Russ. Math. Surv., 59, 1, pp. 11–25.

**Volk, O.**

- [1976] *Miscellanea from the history of celestial mechanics*, Proceedings of the Fifth Conference on Mathematical Methods in Celestial Mechanics (Oberwolfach, 1975), Part II. Celestial Mech. 14 (3), 1976, pp. 365–382.

**Volterra, V.**

- [1888] *Sulle funzioni analitiche poldrome*, Atti Reale Accad. dei Lincei, (IV), 4, 1888, pp. 355–361.
- [1910] *Sopra le funzioni permutabili*, Rom. Acc. L. Rend., (5), 19, 1, 1910, pp. 425–437.
- [1911a] *Contributo allo studio delle funzioni permutabili*, Rom. Acc. L. Rend., (5), 20, 1, 1911, pp. 296–304.
- [1911b] *Sopra le funzioni permutabili di 2<sup>a</sup> specie e le equazioni integrali*, Rom. Acc. L. Rend., (5), 20, 1, 1911, pp. 521–527.

**Voronin, S.M.**

- [1981] *Analytic classification of germs of conformal mappings  $(\mathbb{C}, 0) \rightarrow (\mathbb{C}, 0)$  with identity linear part*, Functional Analytic Appl., 15:1, 1981, pp. 1–17.

**Wallis, J.**

- [1656] *De angulo contactus et semicirculi tractatus*, (1656) in vol. 2 of Wallis' *Opera Mathematica*, Georg Olms Verlag, New York, 1972.

**Wang, X.L. and Hua, X.H.**

- [1997] *Fatou components of transcendental entire functions*, Nanjing Daxue Xuebao Shuxue Bannian Kan, 14, 1997, pp. 180–186.

**Wang, X.L. and Yang, C.C.**

- [2003] *On the Fatou components of two permutable transcendental entire functions*, J. Math. Anal. Appl., 278, 2003, pp. 512–526.

**Ward, M.**

- [1936] *Note on the iteration of one variable*, Bull. AMS, 42, 1936, pp. 688–690.



**Weber, E.**

- [1986] *France, fin de Siècle*, Studies in Cultural History, Belknap Press, Cambridge, MA, 1986.

**Wegner, U.**

- [1928] *Über die ganzzahligen Polynome, die für unendlich viele Primzahlmoduln Permutationen liefern*, Berlin, Philos. Diss, 1928.

**Weyl, H.**

- [1913] *Die Idee der Riemannschen Fläche*, Teubner, 1913 (1955 edition).

**Williams, D.R.**

- [1928] *Compléments au théorème de M. Julia*, Rend. Circ. Mat. Palermo, 52, 1928, pp. 373–415.

**Wilson, C.**

- [1985] *The great inequality of Jupiter and Saturn: from Kepler to Laplace*, Arch. Hist. Exact Sci. 33 (no. 1–3), 1985, pp. 15–290.

**Wintner, A.**

- [1946] *The adiabatic linear oscillator*, Amer. J. Math, 68, 1946, 383-397.

**Włodarczyk, K.**

- [1986] *Pick-Julia theorems for holomorphic maps in  $J^*$ -algebras and Hilbert spaces*, J. Math. Anal. Appl., 120, 1986, pp. 567–571.
- [1987] *Julia's Lemma and Wolff's Theorem for  $J^*$ -Algebras*, Proc. AMS, 99, 3, 1987.

**Wolff, J.**

- [1920] *Über Folgen analytischer Funktionen*, Math. Ann., 81, 1920, pp. 48–51.
- [1926a] *Sur l'itération des fonctions holomorphes dans une région et dont le valeurs appartiennent à cette région*, C.R. Acad. Sci. Paris, 182, 1926, pp. 42–43.
- [1926b] *Sur l'itération des fonctions bornées*, C.R. Acad. Sci. Paris, 182, 1926, pp. 200–201.
- [1926c] *Sur une généralisation d'un théorème de Schwarz*, C.R. Acad. Sci. Paris, 182, 1926, pp. 918–920.
- [1926d] *Sur une généralisation d'un théorème de Schwarz*, C.R. Acad. Sci. Paris, 183, 1926, pp. 500–502.

**Yang, L. and Chang, K.**

- [1965] *Recherches sur la normalité des familles de fonctions analytiques à des valeurs multiples, I. Un nouveau critère et quelques applications*, Sci. Sinica, 14, 1965, pp. 1258–1271; II. Généralizations, Sci. Sinica, 15, 1966, pp. 433–453.

**Yang, P.**

- [1978] *Holomorphic curves and boundary regularity of biholomorphic maps of pseudoconvex domains*, unpublished, 1978.

**Yoccoz, J. Ch.**

- [1988] *Linéarisation des germes de difféomorphismes holomorphes de  $(\mathbb{C}, 0)$* , C.R. Acad. Sci. Paris, 306, 1988, pp. 55–58.

**Ypma, T.**

- [1995] *Historical development of the Newton-Raphson methods*, SIAM Rev., 37, 1995, pp. 531–551.

**Yuguda, K.**

- [1998] *Contrasts and Analogues in Iteration Theory and Dynamical Systems*, Ph.D. dissertation, University of Jos, 1998.

**Zalcman, L.**

- [1975] *A heuristic principle in complex function theory*, Amer. Math. Monthly, 82, 1975, pp. 813–817.
- [1995] *On some questions of Hayman*, unpublished manuscript, Bar-Ilan University, 1995.
- [1998] *Normal families: new perspectives*, Bull. AMS, 35, 1998, pp. 215–230.

**Żorawski, K.**

- [1893] *Ozbieżności iteracyi*, Krak. Ber, 24, 1993 pp. 271–288.

**Zoretti, L.**

- [1911] *Leçons sur le prolongement analytique*, Collection de Monographs sur la Théorie des Fonctions, Gauthier-Villars, Paris, 1911.

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The theory of complex dynamics, whose roots lie in 19th-century studies of the iteration of complex function conducted by Kœnigs, Schöder, and others, flourished remarkably during the first half of the 20th century, when many of the central ideas and techniques of the subject developed. This book by Alexander, Iavernaro, and Rosa paints a robust picture of the field of complex dynamics between 1906 and 1942 through detailed discussions of the work of Fatou, Julia, Siegel, and several others.

A recurrent theme of the authors' treatment is the center problem in complex dynamics. They present its complete history during this period and, in so doing, bring out analogies between complex dynamics and the study of differential equations, in particular, the problem of stability in Hamiltonian systems. Among these analogies are the use of iteration and problems involving small divisors which the authors examine in the work of Poincaré and others, linking them to complex dynamics, principally via the work of Samuel Lattès, in the early 1900s, and Jürgen Moser, in the 1960s.

Many details will be new to the reader, such as a history of Lattès functions (functions whose Julia set equals the Riemann sphere), complex dynamics in the United States around the time of World War I, a survey of complex dynamics around the world in the 1920s and 1930s, a discussion of the dynamical programs of Fatou and Julia during the 1920s, and biographical material on several key figures. The book contains graphical renderings of many of the mathematical objects the authors discuss, including some of the intriguing fractals Fatou and Julia studied, and concludes with several appendices by current researchers in complex dynamics which collectively attest to the impact of the work of Fatou, Julia, and others upon the present-day study.

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