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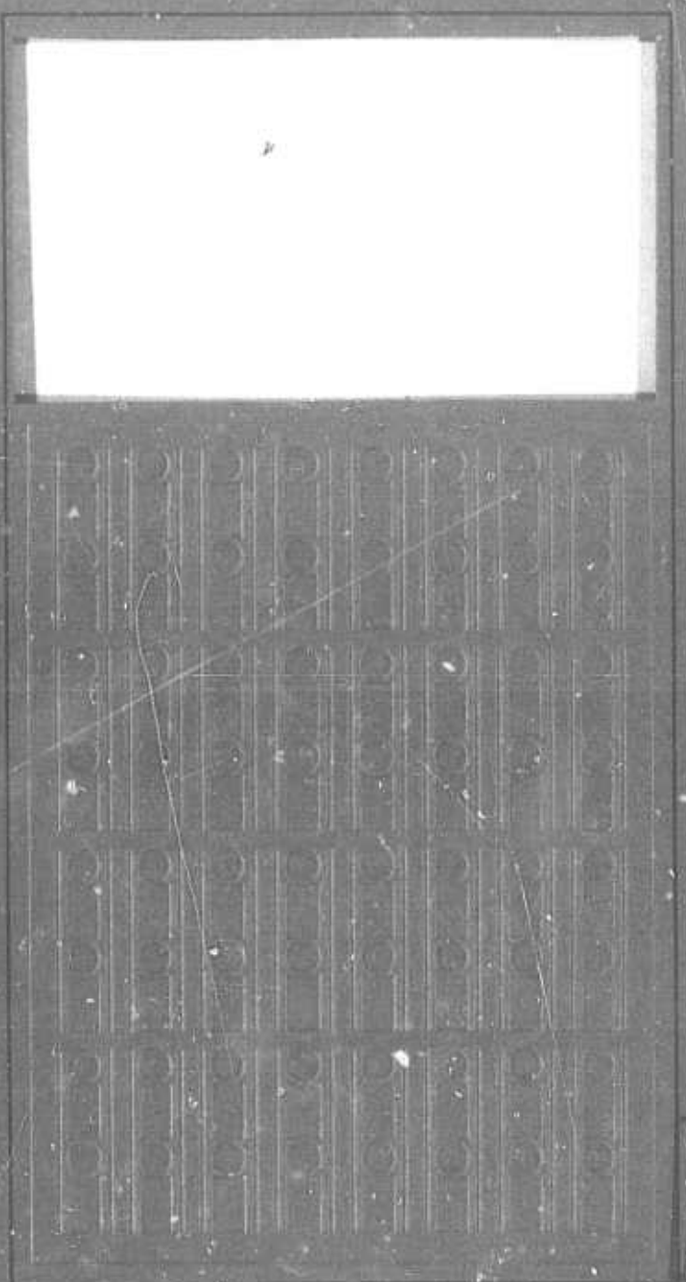

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13. ABSTRACT

This is the Soviet Laser Bibliography for the fourth quarter of 1972 and is No. 10 in the series on Soviet laser developments. The coverage includes basic research on solid state, liquid and gas lasers; chemical lasers; u-v lasers; components; nonlinear optics, spectroscopy of laser materials; ultrashort pulse generation; crystal growing; and general laser theory. Laser applications are listed under biological effects; communications; computer technology; holography; instrumentation and measurement; materials processing; and plasma generation and diagnostics.

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Introduction

This bibliography has been compiled by the staff of Informatics Inc. in response to a continuing contractual assignment to monitor current Soviet-bloc developments in the quantum electronics field. Of all material reviewed, the major yield has been from the approximately 30 periodicals which are known to report the most advanced and interesting findings in Soviet laser technology.

The period covered is the fourth quarter of 1972, and includes all significant laser-related articles received by us during that interval. The structure and selection criteria are basically those used in the preceding reports.

For convenience we have abbreviated frequently cited source names; a source abbreviation list and an author index are included. Unless indicated by a parenthesized (RZh, LZhS) notation, all cited sources are available at Informatics Inc. The numbers in parentheses following the authors' names in the text refer to the Cumulative Affiliations List which includes all author affiliations from 1969 to the present.

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IV. SOURCE ABBREVIATIONS

AiT	-	Avtomatika i telemekhanika
APP	-	Acta physica polonica
DAN ArmSSR	-	Akademiya nauk Armyanskoy SSR. Doklady
DAN AzSSR	-	Akademiya nauk Azerbaydzhanskoy SSR. Doklady
DAN BSSR	-	Akademiya nauk Belorusskoy SSR. Doklady
DAN SSSR	-	Akademiya nauk SSSR. Doklady
DAN TadSSR	-	Akademiya nauk Tadzhikskoy SSR. Doklady
DAN UkrSSR	-	Akademiya nauk Ukrainskoy SSR. Dopovidi
DAN UzbSSR	-	Akademiya nauk Uzbekskoy SSR. Doklady
DBAN	-	Bulgarska akademiya na naukite. Doklady
EOM	-	Elektronnaya obrabotka materialov
FAiO	-	Akademiya nauk SSSR. Izvestiya. Fizika atmosfery i okeana
FGiV	-	Fizika goreniya i vzryva
FiKhOM	-	Fizika i khimiya obrabotka materialov
F-KhMM	-	Fiziko-khimicheskaya mekhanika materialov
FMM	-	Fizika metallov i metallovedeniye
FTP	-	Fizika i tekhnika poluprovodnikov
FTT	-	Fizika tverdogo tela
FZh	-	Fiziologicheskiy zhurnal
GiA	-	Geomagnetizm i aeronomiya
GiK	-	Geodeziya i kartografiya
IAN Arm	-	Akademiya nauk Armyanskoy SSR. Izvestiya. Fizika
IAN Az	-	Akademiya nauk Azerbaydzhanskoy SSR. Izvestiya. Seriya fiziko-tekhnicheskikh i matematicheskikh nauk

IAN B	-	Akademiya nauk Belorusskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk
IAN Biol	-	Akademiya nauk SSSR. Izvestiya. Seriya biologicheskaya
IAN Energ	-	Akademiya nauk SSSR. Izvestiya. Energetika i transport
IAN Est	-	Akademiya nauk Estonskoy SSR. Izvestiya. Fizika matematika
IAN Fiz	-	Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya
IAN Fizika zemli	-	Akademiya nauk SSSR. Izvestiya. Fizika zemli
IAN Kh	-	Akademiya nauk SSSR. Izvestiya. Seriya khimicheskaya
IAN Lat	-	Akademiya nauk Latviyskoy SSR. Izvestiya
IAN Met	-	Akademiya nauk SSSR. Izvestiya. Metally
IAN Mold	-	Akademiya nauk Moldavskoy SSR. Izvestiya. Seriya fiziko-tekhnicheskikh i matematicheskikh nauk
IAN SO SSSR	-	Akademiya nauk SSSR. Sibirskoye otdeleniye. Izvestiya
IAN Tadzh	-	Akademiya nauk Tadzhikskoy SSR. Izvestiya. Otdeleniye fiziko-matematicheskikh i geologo-khimicheskikh nauk
IAN TK	-	Akademiya nauk SSSR. Izvestiya. Tekhnicheskaya kibernetika
IAN Turk	-	Akademiya nauk Turkmenskoy SSR. Izvestiya. Seriya fiziko-tekhnicheskikh, khimicheskikh, i geologicheskikh nauk
IAN Uzb	-	Akademiya nauk Uzbekskoy SSR. Izvestiya. Seriya fiziko-matematicheskikh nauk
IBAN	-	Bulgarska akademiya na naukite. Fizicheski institut. Izvestiya na fizicheskaya institut s ANEB
I-FZh	-	Inzhenerno-fizicheskiy zhurnal

IiR	-	Izobretatel' i ratsionalizator
ILEI	-	Leningradskiy elektrotekhnicheskiy institut. Izvestiya
IT	-	Izmeritel'naya tekhnika
IVUZ Avia	-	Izvestiya vysshikh uchebnykh zavedeniy. Aviatsionnaya tekhnika
IVUZ Chern	-	Izvestiya vysshikh uchebnykh zavedeniy. Chernaya metallurgiya
IVUZ Energ	-	Izvestiya vysshikh uchebnykh zavedeniy. Energetika
IVUZ Fiz	-	Izvestiya vysshikh uchebnykh zavedeniy. Fizika
IVUZ Geod	-	Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"yemka
IVUZ Geol	-	Izvestiya vysshikh uchebnykh zavedeniy. Geologiya i razvedka
IVUZ Gorn	-	Izvestiya vysshikh uchebnykh zavedeniy. Gornyy zhurnal
IVUZ Mash	-	Izvestiya vysshikh uchebnykh zavedeniy. Mashinostroyeniye
IVUZ Priboro	-	Izvestiya vysshikh uchebnykh zavedeniy. Priborostroyeniye
IVUZ Radioelektr	-	Izvestiya vysshikh uchebnykh zavedeniy. Radioelektronika
IVUZ Radiofiz	-	Izvestiya vysshikh uchebnykh zavedeniy. Radiofizika
IVUZ Stroi	-	Izvestiya vysshikh uchebnykh zavedeniy. Stroitel'stvo i arkhitektura
KhVE	-	Khimiya vysokikh energiy
KiK	-	Kinetika i kataliz
KL	-	Knizhnaya letopis'
Kristal	-	Kristallografiya
KSpF	-	Kratkiye soobshcheniya po fizike
LC	-	Received at Library of Congress

LZhS	-	Letopis' zhurnal'nykh statey
MiTOM	-	Metallovedeniye i termicheskaya obrabotka materialov
MP	-	Mekhanika polimerov
MTT	-	Akademiya nauk SSSR. Izvestiya. Mekhanika tverdogo tela
MZhiG	-	Akademiya nauk SSSR. Izvestiya. Mekhanika zhidkosti i gaza
NK	-	Novyye knigi
NM	-	Akademiya nauk SSSR. Izvestiya. Neorganicheskiye materialy
NTO SSSR	-	Nauchno-tekhnicheskiye obshchestva SSSR
OiS	-	Optika i spektroskopiya
OMP	-	Optiko-mekhanicheskaya promyshlennost'
Otkr izobr	-	Otkrytiya, izobreteniya, promyshlennyye obraztsy, tovarnyye znaki
PF	-	Postepy fizyki
Phys abs	-	Physics abstracts
PM	-	Prikladnaya mekhanika
PMM	-	Prikladnaya matematika i mekhanika
PSS	-	Physica status solidi
PSU	-	Pribory i sistemy upravleniya
PTE	-	Pribory i tekhnika eksperimenta
Radiotekh	-	Radiotekhnika
RiE	-	Radiotekhnika i elektronika
RZhAvtom	-	Referativnyy zhurnal. Avtomatika, telemekhanika i vychislitel'naya tekhnika
RZhElektr	-	Referativnyy zhurnal. Elektronika i yeye primeneniye

RZhF	-	Referativnyy zhurnal. Fizika
RZhFoto	-	Referativnyy zhurnal. Fotokinotekhnika
RZhGeod	-	Referativnyy zhurnal. Geodeziya i aeros"-yemka
RZhGeofiz	-	Referativnyy zhurnal. Geofizika
RZhInf	-	Referativnyy zhurnal. Informatics
RZhKh	-	Referativnyy zhurnal. Khimiya
RZhMekh	-	Referativnyy zhurnal. Mekhanika
RZhMetrolog	-	Referativnyy zhurnal. Metrologiya i izmeritel'naya tekhnika
RZhRadiot	-	Referativnyy zhurnal. Radiotekhnika
Sb1	-	Sbornik. Kvantovaya elektronika, no. 3(9), Moskva, 1972
Sb2	-	Nelineynyye protsessy v optike, no. 2, Novosibirsk, 1972
Sb3	-	Problemy fiziki soyedineniy $A^{II}B^{VI}$, v. 1, Vil'nyus, 1972
Sb4	-	Radioelektronika letatel'nykh apparatov, Khar'kov, Khar'kovskiy aviatsionnyy institut, 1972
Sb5	-	Konferentsiya po avtomatizatsii nauchno-issledovaniya na osnove primeneniya ETsVM, 1972. Novosibirsk, 1972
Sb6	-	Radiotekhnika. Khar'kov, Izd-vo Khar'kovskogo universiteta, 1972
Sb 7	-	Mezhdunarodnyy biofizicheskiy kongress, Moskva, 1972. 4th. Tezisy. Moskva, 1972
Sb8	-	Vsesoyuznaya konferentsiya po rasprostraneniyu radiovoln. 10th Tezisy dokladov, Moskva, Nauka, 1972
Sb9	-	Nauchno-tekhnicheskiy sbornik Vsesoyuznogo proyektno-izyskatel'skogo i nauchno-issledovatel'skogo instituta "Energoset'proyekt," no. 6, 1972

Sb10	-	Impul'snaya fotometriya, no. 2, Leningrad, Mashinostroyeniye, 1972
Sb11	-	Ural'skaya konferentsiya po spektroskopii, 1971. 7th, no. 1, Sverdlovsk, 1971
Sb12	-	Otbor i peredacha informatsii, no. 32, Kiyev, Izd-vo Naukova dumka, 1972
Sb13	-	Budushcheye nauki, no. 5, Moskva, Izd-vo Znaniye, 1972
Sb14	-	Fizika plazmy i problemy upravlyayemogo i termoyadernogo sinteza (Kiyev), no. 1, 1971
Sb15	-	Vsesoyuznaya konferentsiya po spektroskopii vakuumnogo ul'trafioleta i vzaimodeystviyu izlucheniya s veshchestvom (VUF-72). 3rd. Khar'kov, 1972
SovSciRev	-	Soviet science review
TiEKh	-	Teoreticheskaya i eksperimental'naya khimiya
TKiT	-	Tekhnika kino i televideniya
TMF	-	Teoreticheskaya i matematicheskaya fizika
Tr1	-	Fizicheskiy institut AN SSSR. Trudy, no. 60, 1972
Tr2	-	Tashkentskiy gosudarstvennyy pedagogicheskiy institut. Uchenyye zapiski, no. 90, 1971
Tr3	-	Institut eksperimental'noy meteorologii. Trudy, no. 1(33), 1972
Tr4	-	Glavnaya geofizicheskaya observatoriya. Trudy, no. 279, 1972
Tr5	-	Yerevanskiy politekhnicheskiy institut. Sbornik nauchnykh trudov, no. 25, 1971
Tr6	-	Vsesoyuznyy nauchno-issledovatel'skiy institut gornoy geomekhaniki i marksheyderskogo dela, no. 84, 1971
Tr7	-	Nauchno-issledovatel'skiy institut grazhdanskoy aviatsii, no. 72, 1972
Tr8	-	Nauchno-issledovatel'skiy institut gidrometeorologicheskogo priborostroyeniya, no. 27, 1972

Tr9	-	Moskovskiy institut elektronnoy tekhniki. Sbornik nauchnykh trudov po problemy mikroelektroniki, no. 10, 1972
TVT	-	Teplofizika vysokikh temperatur
UFN	-	Uspekhi fizicheskikh nauk
UFZh	-	Ukrainskiy fizicheskiy zhurnal
UMS	-	Ustalost' metallov i splavov
UNF	-	Uspekhi nauchnoy fotografii
VAN	-	Akademiya nauk SSSR. Vestnik
VAN BSSR	-	Akademiya nauk Belorusskoy SSR. Vestnik
VAN KazSSR	-	Akademiya nauk Kazakhskoy SSR. Vestnik
VBU	-	Belorusskiy universitet. Vestnik
VDNKh SSSR	-	VDNKh SSSR. Informatsionnyy byulleten'
VLU	-	Leningradskiy universitet. Vestnik. Fizika, khimiya
VMU	-	Moskovskiy universitet. Vestnik. Seriya fizika, astronomiya
ZhETF	-	Zhurnal eksperimental'noy i teoreticheskoy fiziki
ZhETF P	-	Pis'ma v Zhurnal eksperimental'noy i teoreticheskoy fiziki
ZhFKh	-	Zhurnal fizicheskoy khimii
ZhNiPFiK	-	Zhurnal nauchnoy i prikladnoy fotografii i kinematografii
ZhNKh	-	Zhurnal neorganicheskoy khimii
ZhPK	-	Zhurnal prikladnoy khimii
ZhPMTF	-	Zhurnal prikladnoy mekhaniki i teoreticheskoy fiziki
ZhPS	-	Zhurnal prikladnoy spektroskopii
ZhTF	-	Zhurnal tekhnicheskoy fiziki
ZhVMMF	-	Zhurnal vychislitel'noy matematiki i matematicheskoy fiziki
ZL	-	Zavodskaya laboratoriya

V. CUMULATIVE AFFILIATIONS LIST

NS. Non-Soviet

0. Affiliation not shown

1. Physics Institute im. Lebedev, AN SSSR, Moscow (Fizicheskiy institut im. Lebedeva).

2. Moscow State University (Moskovskiy gosudarstvennyy universitet).

3. Institute of Physics, AN BSSR, Minsk (Institut fiziki, AN BSSR).

4. Leningrad Physical-technical Institute im. Ioffe (Fiziko-tekhnicheskiy institut im. Ioffe).

5. Institute of Physics, AN UkrSSR, Kiev (Institut fiziki, AN UkrSSR).

6. Institute of Semiconductors, AN UkrSSR, Kiev (Institut poluprovodnikov, AN UkrSSR).

7. State Optical Institute im. Vavilov, Leningrad (Gosudarstvennyy opticheskiy institut im. Vavilova).

8. Radiophysics Scientific Research Institute at Gorkiy State University (Gor'kovskiy nauchno-issledovatel'skiy radiofizicheskiy institut pri Gor'kovskom gos. universitete).

9. Institute of Radiophysics and Electronics, Siberian Branch AN SSSR, Novosibirsk (Institut radiofiziki i elektroniki, Sib. otdel AN SSSR).

10. Institute of Semiconductor Physics of the Siberian Branch, AN SSSR, Novosibirsk (Institut fiziki poluprovodnikov, Sib. otdel AN SSSR).

11. Kazan' State University (Kazanskiy gos. universitet).

12. Leningrad State Universitet (Leningradskiy gos. universitet).

13. Institute of Crystallography, AN SSSR, Moscow (Institut kristallografiya, AN SSSR).

14. University of Friendship Among Nations im. Lumumba, Moscow (Universitet druzhby narodov im. Lumumby).

15. Institute of Radio Engineering and Electronics, AN SSSR, Moscow (Institut radiotekhniki i elektroniki, AN SSSR).

16. Moscow Engineering Physics Institute (Moskovskiy inzhenerno-fizicheskiy institut).

17. Institute of Mechanical Problems, AN SSSR, Moscow (Institut problem mekhaniki, AN SSSR).

18. Institute of General and Inorganic Chemistry im. Kurnakov, AN SSSR, Moscow (Institut obshchey i neorganicheskoy khimii im. Kurnakova, AN SSSR).

19. Moscow Power Engineering Institute (Moskovskiy energeticheskiy institut).

20. All Union Scientific Research Institute of Physicotechnical and Electronic Measurements, Moscow (Vsesoyuznyy nauchno-issled. institut fiziko-tekhnicheskikh i elektronnykh izmereniy).

21. Acoustics Institute, AN SSSR, Moscow (Akusticheskiy institut, AN SSSR).

22. Institute of metallurgy im. Baykov, Moscow (Institut metallurgii im. Baykova).

23. Institute of Atomic Energy im. Kurchatov, Moscow (Institut atomnoy energii im. Kurchatova).

24. Moscow Higher Technical College im. Bauman (Moskovskoye vyssheye tekhnicheskoye uchilishche im. Baumana).

25. Moscow Scientific Research Institute of Instrument Manufacture (Moskovskiy nauchno-issled. institut instrumental'nogo proizvodstva).

26. Central Scientific Research Institute of the Ministry of Defense, Moscow (Tsentral'nyy nauchno-issled. institut Ministerstva oborony).

27. All Union Scientific Research Institute of Textile and Light Machinery, Moscow (Vsesoyuznyy nauchno-issled. institut tekstil'nogo i legkogo mashinostroyeniya).

28. Leningrad Opticomechanical Society (Leningradskoye optiko-mekhanicheskoye obshchestvo)

29. Leningrad Polytechnic Institute (Leningradskiy politekhnicheskiy institut).

30. Leningrad Institute of Precision Mechanics and Optics (Leningradskiy institut tochnoy mekhaniki i optiki).

31. Institute of Semiconductors, AN SSSR, Leningrad (Institut poluprovodnikov, AN SSSR).

32. Physics Scientific Research Institute at Leningrad State University (Fizicheskiy nauchno-issled. institut pri Leningradskom gos. universitete).

33. Institute of Silicate Chemistry im. Grebanshchikov, AN SSSR, Leningrad (Institut khimii silikatov im. Grebanshchikova, AN SSSR).

34. Khar'kov State University (Khar'kovskiy gos. universitet).

35. Khar'kov Institute of Radioelectronics (Khar'kovskiy institut radioelektroniki).

36. Physicotechnical Institute of Low Temperatures, AN UkrSSR, Khar'kov (Fiziko-tekhnicheskiy institut nizkikh temperatur, AN UkrSSR).

37. Yerevan State University (Yerevanskiy gos. universitet).

38. Kazan' Physicotechnical Institute (Kazanskiy fiziko-tekhnicheskiy institut).

39. Institute of Cybernetics, AN GruzSSR (Institut kibernetiki, AN GruzSSR).

40. Tbilisi State University (Tbilisskiy gos. universitet).

41. Rostov-on-Don State University (Rostovskiy-na-Donu gos. universitet).

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64. Institute of Atmospheric Physics, AN SSSR (Institut fiziki atmosfery, AN SSSR).

65. Institute of Problems of Physics, AN SSSR (Institut fizicheskikh problem, AN SSSR).

66. Institute of Solid State Physics, AN SSSR (Institut fiziki tverdogo tela, AN SSSR).

67. Institute of Physics of Chemistry, AN SSSR (Institut khimicheskoy fiziki, AN SSSR).

68. Institute of Space Research, AN SSSR (Institut kosmicheskikh issledovaniy, AN SSSR).

69. Institute of Oceanography, AN SSSR (Institut okeanologii, AN SSSR).

70. Institute of Organic and Physical Chemistry, AN SSSR (Institut organicheskoy i fizicheskoy khimii, AN SSSR).

71. Institute of Applied Mathematics, AN SSSR (Institut prikladnoy matematiki, AN SSSR).

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75. Institute of Automation and Electronic Measurements, Siberian Branch AN SSSR (Institut avtomatiki i elektrometrii, Sib. otdel. AN SSSR).

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140. All Union Scientific Research Institute of Physicotechnical and Radiotechnical Measurements (VNIFTRI).

141. All Union Scientific Research Institute of Opticophysical Measurements (Vsesoyuznyy nauchno-issled. institut optiko-fizicheskikh izmereniy).

142. All Union Scientific Research Institute for Synthesis of Mineral Ore (VNII sinteza mineral'nogo syrya).

143. All Union Scientific Research Institute of Synthetic Rubber (VNII sinteticheskogo kauchuka).

144. All Union Scientific Research Institute of Television and Radio Broadcasting (VNII televideniya i radioveshchaniya).

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200. Khar'kov Aviation Institute (Khar'kovskiy aviatsionyy institut).

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206. Institute of Geology and Geophysics, Siberian Branch, AN SSSR, Novosibirsk (Institut geologii i geofiziki SOAN).

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211. Kalinin Polytechnic Institute (Kalininskiy politekhnicheskiy institut).

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213. Leningrad Technological Institute (Leningradskiy tekhnologicheskiy institut).

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215. Physico-technical Institute, AN TadzhSSR (Fiziko-tekhnicheskiy institut AN TadzhSSR).

216. Kazan' Aviation Institute (Kazanskiy aviatsionnyy institut).

217. Poltava Civil Engineering Institute (Poltavskiy inzhenerno-stroitel'nyy institut).

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219. Belorussian Polytechnic Institute, Minsk (Belorusskiy politekhnicheskiy institut).

220. Institute of Experimental Meteorology (Institut eksperimental'noy meteorologii).

221. All Union Scientific Research Institute of Hydraulic Engineering (VNII gidrotekhniki).

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223. Central Institute for the Advanced Training of Physicians (Tsentral'nyy institut usovershenstvovaniya vrachey).

224. Yerevan Polytechnic Institute (Yerevanskiy politekhnicheskiy institut).

225. Institute for Problems of Oncology, AN UkrSSR (Institut problem onkologii AN UkrSSR).

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230. Novosibirsk Institute for Engineers of Geodesy, Aerial Surveying and Cartography (Novosibirskiy institut inzhenerov geodezii, aerofotos"yemki i kartografii).

231. Scientific Research Institute of Motion Pictures and Photography (Nauchno-issledovatel'skiy kinofotoinstitut, NIKFI).

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