Golden mean Siegel disks: renormalization hyperbolicity and applications

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We discuss two different renormalization techniques for golden mean Siegel disks, cylinder renormalization and renormalization for commuting pairs, and describe our recent computer-assisted proof of the renormalization hyperbolicity for almost commuting pairs.

This proof closes the issue of the golden mean universality in Siegel disks, and also leads to existence of golden mean Siegel cylinders in $\mathbb{C}^2$ for a class of two-dimensional perturbations of the golden mean quadratic polynomial.

Joint work with Michael Yampolsky (University of Toronto, Canada).