On Hausdorff dimension of Julia sets of real Feigenbaum maps

DUDKO Artem

Institute of Mathematics, Polish Academy of Sciences, Poland
E-mail adudko@impan.pl

Recently, jointly with Scott Sutherland we showed that the Feigenbaum map has Julia set of Hausdorff dimension less than two [1]. In this talk I will present a generalization of our approach to real periodic points of Feigenbaum renormalization [2]. I will give a sufficient condition for the Julia set of such map to have Hausdorff dimension less than two. This condition can be verified numerically. Empirical computations suggest that for low periods it is satisfied, and so the corresponding Julia sets have Hausdorff dimension less than two. In addition, I will discuss an application of McMullen's eigenvalue method [3] to obtain estimates on the Hausdorff dimension of such Julia sets (ongoing joint work with Igors Gorbovickis).

References

[1] A. Dudko and S. Sutherland: *On the Lebesgue measure of the Feigenbaum Julia set.* Invent. math. **221** (2020), 167–202.

[2] A. Dudko: *On Lebesgue measure and Hausdorff dimension of Julia sets of real periodic points of renormalization.* Bulletin Polish Acad. Sci. Math. **68** (2020), 151–168.

[3] C. McMullen: *Hausdorff Dimension and Conformal Dynamics, III: Computation of Dimension.* American Journal of Mathematics. **120**, no. 4 (1998), 691–721.