

Set-oriented computation in dynamics

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Twenty years ago, Dellnitz and Hohmann introduced a set-oriented numerical framework for the approximation of invariant objects in dynamical systems. These methods have been widely used and also considerably extended in several directions since, e.g. to compute dynamical quantities such as invariant measures, Lyapunov exponents, and topological entropy, or objects such as almost-invariant and coherent sets, which play a crucial role in the study of transport processes in real-world systems.

In this talk, we will return to the original ideas of set-oriented computation and report on recent results on the approximation of (i) rotation sets of torus homeomorphisms, and (ii) fractal dimensions.

This is joint work with Tobias Oertel-Jäger, Katja Polotzek, and Matthias Wagner.