Miniworkshop “Clifford analysis and symplectic dynamics”
University of Antwerp, Belgium
September 4-5, 2023

C0-stability of topological entropy for 3-dimensional Reeb flows

Marcelo Alves

(Antwerpen)

The C0-distance on the space of contact forms on a contact manifold has been studied recently by different authors. It can be thought of as an analogue for Reeb flows of the Hofer metric on the space of Hamiltonian diffeomorphisms, and a generalisation of the C0-distance on the space of Riemannian metrics. I will explain the following recent result, obtained in collaboration with Lucas Dahinden, Matthias Meiwes and Abror Pirnapasov: the topological entropy of Reeb flows on contact 3-manifolds is lower semicontinuous with respect to the C0 metric on a C-infinity open dense set on the space of Reeb flows.

Applied to geodesic flows of Riemannian metrics on surfaces, this says that for "most" Riemannian metrics on closed surfaces, one cannot destroy positivity of topological entropy by C0-small perturbations of the metric. This is in some sense unexpected, as the geodesic equations depend on the first derivatives of the Riemannian metric.