

Dynamical Systems Seminar

Date. October 17th, 14h30 (Friday)

Place. Room FC1.031

Speaker. Mark Pollicott (Warwick University)

Title. (Non)-Abelian Livsic Theorem

Abstract.

The classical Livsic theorem is a simple and useful result for Anosov diffeomorphism (or flows) which shows that a smooth function is trivial (i.e., a coboundary) if the sum (or integral) of the function vanishes around every closed orbit. In 2024, Gogolev and F. Rodriguez Hertz gave a generalisation of the result to lifts of Anosov flows to manifolds whose covering group is an infinite abelian group. (They called this an Abelian Livsic theorem.) A natural example is where the Anosov flow is a geodesic flow on a compact surface of negative curvature and the lift is the geodesic flow on a $\mathbb{Z}^d$ -cover of the surface. I will describe the corresponding result for more other (non-abelian) covers and groups (which I whimsically call a “(Non)-Abelian Livsic Theorem”).

Gogolev and Rodriguez Hertz used their result to describe a strengthening of the Otal-Croke result that negatively curved surfaces are determined by the lengths of closed geodesics (i.e., periods of closed orbits for the geodesic flow). This carries over to any natural cover.

This is joint with Richard Sharp.

There will be a coffee break after the seminar.