Mathematics, Statistics, and Computer Science   **@ UIC**

Geometry, Topology and Dynamics Seminar

Commuting homeomorphisms with non-commuting lifts

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Abstract: Let M be a manifold, and $f, g : M \to M$ commuting homeomorphisms. We consider whether there exist lifts of f and g to the universal cover of M that also commute. We especially focus on the case where f and g are homotopic to the identity, so there are distinguished homotopy lifts.

We will see that the only two-manifold admitting commuting homeomorphisms with non-commuting homotopy lifts is the open annulus, and examples among closed three-manifolds are also quite limited. The proof uses a dynamical tool called homological rotation vectors, and Thurston's Geometrization Theorem in the latter case. Time permitting, we will specialize to the open annulus, and study what these examples can look like.

Monday, October 20 at 3:00 PM in SEO 636