

The minimal set of Kuperberg's flows

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In 1993 K. Kuperberg constructed examples of C^∞ and real analytic flows without periodic orbits on any closed 3-manifold. These examples continue to be the only known examples with such properties and are constructed using plugs. A plug is a manifold with boundary of the type $\mathbb{D}^2 \times [0, 1]$ endowed with a flow that enters through $\mathbb{D}^2 \times \{0\}$, exits through $\mathbb{D}^2 \times \{1\}$ and is parallel to the rest of the boundary. Moreover, it has the particularity that there are orbits that enter the plug and never exit, that is there are trapped orbits. The closure of a trapped orbit limits to a compact invariant set contained entirely within the interior of the plug. This compact invariant set contains a unique minimal set.

In the talk I will present some results on the shape properties of this minimal set, pointing out some results that we have recently proved that applied to a whole family of minimal sets.

This is joint work with Steve Hurder.

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