

Contact manifolds with infinitely many Reeb orbits.

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Abstract:

Let C be a contact manifold. We say that C always has infinitely many Reeb orbits if every contact form supporting the contact structure on C has infinitely many Reeb orbits. Note that we do not require that these Reeb orbits are degenerate.

We show that the unit cotangent bundle of any simply connected manifold whose cohomology has at least 2 generators has this property. Also we show that every manifold diffeomorphic to some contact manifold of dimension 5 or higher admitting a strong exact filling admits a (possibly different) contact structure with this property. We use invariants called symplectic homology and local Floer homology to achieve these results.