

Invariant metrics on cohomogeneity one Riemannian manifolds.

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Abstract: A cohomogeneity one Riemannian manifold M is a smooth Riemannian manifold acted on by a compact subgroup G of the isometry group with a codimension one orbit. Thanks to the high degree of symmetry of M it is possible to adapt many techniques used in the homogeneous setting and many problems, related to PDE's in the general case, reduce to ODE's that are, in principle, easier to attack. In fact this class has been used to produce many inhomogeneous examples of special Riemannian structures.

The existence of a codimension one orbit in M implies that the union of the codimension one orbits is an open dense set in M . If M is compact and simply connected then there are 2 orbits of higher codimension and due to this it is not trivial to describe the smooth G -invariant metrics on M .

During the talk we will discuss this problem and some applications to the local existence of Einstein metrics and obstructions to the existence of nonnegatively curved metrics on M .