

Non-negative curvature obstructions in cohomogeneity one and the Kervaire spheres

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Dedicated to Eugenio Calabi on his 80th birthday

Abstract. In contrast to the homogeneous case, we show that there are compact cohomogeneity one manifolds that do not support invariant metrics of non-negative sectional curvature. In fact we exhibit infinite families of such manifolds including the exotic Kervaire spheres. Such examples exist for any codimension of the singular orbits except for the case when both are equal to two, where existence of non-negatively curved metrics is known.

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