LOCAL RIGIDITY OF ACTIONS OF ISOMETRIES ON COMPACT RIEMANNIAN MANIFOLDS

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Abstract: In this joint work with Zhiyan Zhao (Nice), we consider perturbations of isometries of a compact Riemannian manifold M. We prove that, under some conditions, a finitely presented group of such small enough perturbations is analytically or smoothly conjugate on (analytic or smooth) M to the same group of isometry it is a perturbation of. The result generalizes the rigidity theorems of Arnold, Herman, Yoccoz, Moser, etc. about circle diffeomorphisms which are small perturbations of rotations. The proof relies on a "Diophantine-like" condition, relating the actions of the isometry group and the eigenvalues of the Laplace-Beltrami operator.