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Title: Constant Jacobi osculating rank of a g.o. space. A method to obtain explicitly the Jacobi operator

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A Riemannian g.o. manifold is a homogeneous Riemannian manifold on which every geodesic is an orbit of a one-parameter group of isometries. The first counter-example of a Riemannian g.o. manifold which is not naturally reductive is Kaplan's six-dimensional example. In this paper, we study the constant osculating rank of the curvature operator and of the Jacobi operator over g.o. spaces settling the concept of constant Jacobi osculating rank of a Riemannian g.o. space. Moreover, we show that an expression of the Jacobi operator valid for all geodesic of a given g.o. space exists on every Riemannian g.o. space with constant Jacobi osculating rank. In addition, we develop a method to obtain such expression when we work on a g.o. space which is also an H -type group. In particular, we apply this method on Kaplan's example.

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