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Totally geodesic submanifolds and Hopf fibrations

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Abstract: The classification of transitive Lie group actions on spheres was obtained by Borel, Montgomery, and Samelson in the forties. As a consequence of this, it turns out that apart from the round metric there are other Riemannian metrics in spheres which are invariant under the action of a transitive Lie group. These other homogeneous metrics in spheres can be constructed by modifying the metric of the total space of the complex, quaternionic or octonionic Hopf fibration in the direction of the fibers.

In this talk, I will report on a joint work with Carlos Olmos (Universidad Nacional de Córdoba), where we classified totally geodesic submanifolds in Hopf-Berger spheres. These are those Riemannian homogeneous spheres obtained by rescaling the round metric of the total space of Hopf fibrations by a positive factor in the direction of the fibers.

