Generalizing positive curvature and fatness

Miguel Domínguez-Vázquez

CITMAga − Universidade de Santiago de Compostela

The study of Riemannian manifolds with positive sectional curvature has been of special interest in the history of Riemannian geometry. Due to the apparent scarcity of spaces admitting positively curved metrics, weaker conditions have been proposed over the last few decades. One of them is known as positive k-intermediate Ricci curvature ($\mathrm{Ric}_k > 0$). On a Riemannian manifold of dimension n, this condition interpolates between positive sectional curvature (when $k = 1$) and positive Ricci curvature (when $k = n - 1$).

In this talk I will present the main ideas and results of an ongoing project aiming at constructing new examples of compact spaces with positive intermediate Ricci curvature. The techniques involve certain metric deformations via bundles of homogeneous spaces, as well as a generalization of the concept of fatness, which was introduced by Weinstein to understand when the total space of a fiber bundle is positively curved.

The talk is based on a joint work with David González-Álvaro, Alberto Rodríguez-Vázquez and Jason DeVito.