Abstract

For a compact spin Riemannian manifold (M,g^{TM}) of dimension n such that the associated scalar curvature k^{TM} verifies that $k^{TM}\geqslant n(n-1)$, Llarull's rigidity theorem says that any area decreasing smooth map f from M to the unit sphere $\mathbb{S}^{n}$ of nonzero degree is an isometry. We present in this talk a new proof for Llarull's rigidity theorem in odd dimensions via a spectral flow argument. This approach also works for a generalization of Llarrull's theorem when the sphere $\mathbb{S}^{n}$ is replaced by an arbitrary smooth strictly convex closed hypersurface in $\mathbb{R}^{n+1}$. The results answer two questions by Gromov.

This is a joint work with Guangxiang Su and Xiangsheng Wang.