Hong Kong Geometry Colloquium

Positive quaternionic Kähler manifolds and symmetry rank

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Abstract

A quaternionic Kähler manifold M is called positive if it has positive scalar curvature. In this talk I will present several connectedness theorems for quaternionic immersions in a quaternionic Kähler manifold, e.g. the Barth-Lefschetz type connectedness theorem for quaternionic submanifolds in a positive quaternionic Kähler manifold. This may be apllied study positive quaternionic Kähler manifolds with large symmetry rank. Among others we prove that a $4m$-dimensional positive quaternionic Kähler manifold with symmetry rank at least $(m-3)$ must be either isometric to $\mathbb{H}P^m$ or $Gr_2(\mathbb{C}^{m+2})$, if $m \geq 12$. This recognization theorem is sharp.