

QUATERNIONIC KÄHLER MANIFOLDS OF NON-NEGATIVE CURVATURE

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The LeBrun–Salamon conjecture states that quaternion Kähler manifolds with positive scalar curvature are symmetric. This conjecture remains largely open. Even under the much stronger assumption of non-negative sectional curvature, very little is known.

A. Gray showed that compact Kähler manifolds with constant scalar curvature and non-negative sectional curvature are locally symmetric.

In my talk, I will present a new and very short proof of this result.

Moreover, I will explain why the analogous statement in the quaternion Kähler case, as proposed by Chow and Yang, is not correct.

Finally, I will discuss a new curvature condition that implies a quaternion Kähler manifold is symmetric. The proof uses the nearly Kähler structure of the twistor space and a generalization of A. Gray's result for Kähler manifolds to the nearly Kähler setting.

My talk is based on joint work with Oscar Macià, Andrei Moroianu, and Gregor Weingart.