

On the Kobayashi conjecture for hyperkähler manifolds

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The Kobayashi pseudometric on a complex manifold M is the maximal pseudometric such that any holomorphic map from the Poincaré disk to M is distance-decreasing. Kobayashi has conjectured that this pseudometric vanishes on Calabi-Yau manifolds. Using ergodicity of complex structures, we prove this conjecture for any hyperkähler manifold that admits a deformation with a Lagrangian fibration, and its Picard rank is not maximal. We shall discuss the proof of Kobayashi's conjecture for K3 surfaces and for certain hyperkähler manifolds. These results are joint with S. Lu and M. Verbitsky.