

The Einstein Equation in Kähler Geometry

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In Kähler geometry, the Einstein equation reduces to a scalar equation. The existence of a solution to this equation was conjectured by E. Calabi in the 1950's and subsequently proved by S.T. Yau in the mid 1970's. But recent advances building on Yau's theorem can go much further, and accumulate a wealth of geometric information for Kähler manifolds, including diameter and non-collapse volume estimates, Green's functions, Sobolev inequalities, and improved versions of the Gromov convergence theorem, none of which requires any assumption on the Ricci curvature, as their Riemannian analogues do. This is joint work with B. Guo, F. Tong, J. Song, and J. Sturm.

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