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Asymptotic Chow polystability in Kähler geometry. (English) Zbl 1246.32026


Summary: It is conjectured that the existence of constant scalar curvature Kähler metrics will be equivalent to K-stability, or K-polystability depending on terminology (Yau-Tian-Donaldson conjecture). There is another GIT stability condition, called the asymptotic Chow polystability. This condition implies the existence of balanced metrics for polarized manifolds \((M,L^k)\) for all large \(k\). It is expected that the balanced metrics converge to a constant scalar curvature metric as \(k\) tends to infinity under further suitable stability conditions. In this survey article I will report on recent results saying that the asymptotic Chow polystability does not hold for certain constant scalar curvature Kähler manifolds. We also compare a paper of Ono with that of Della Vedova and Zuddas.

For the entire collection see [Zbl 1235.00045].

MSC:

32Q15 Kähler manifolds
32Q20 Kähler-Einstein manifolds
32Q26 Notions of stability for complex manifolds
53C55 Global differential geometry of Hermitian and Kählerian manifolds
53C21 Methods of global Riemannian geometry, including PDE methods; curvature restrictions
55N91 Equivariant homology and cohomology in algebraic topology

Keywords:
Kähler-Einstein manifold; Chow stability; toric Fano manifold

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