

Geometry, Topology and Dynamics Seminar

Weighted cscK metrics and weighted K-stability

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Abstract: We will introduce a notion of a Kähler metric with constant weighted scalar curvature on a compact Kähler manifold X , depending on a fixed real torus in the reduced group of automorphisms of X , and two smooth (weight) functions defined on the momentum image of X . We will also define a notion of weighted Mabuchi energy adapted to our setting, and of a weighted Futaki invariant of \mathbb{C}^* -compatible smooth Kähler test configuration associated to (X, \cdot) . After that, using the geometric quantization scheme of Donaldson, we will show that if a projective manifold admits in the corresponding Hodge Kähler class a Kähler metric with constant weighted scalar curvature, then this metric minimizes the weighted Mabuchi energy, which implies a suitable notion of weighted K-semistability. As an application, we describe the Kähler classes on a geometrically ruled complex surface of genus greater than 2, which admits conformally Kähler Einstein-Maxwell metrics.

Monday, September 9 at 3:00 PM in 636 SEO