



Geometry Webinar AmSur/AmSul

The Einstein-Hilbert functional in Kähler and Sasaki geometry

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01/12/2023 - sexta-feira

14:00 - Online

Resumo: In this talk I will present a recent joint work with Abdellah Lahdilli and Carlo Scarpa where, given a polarised Kähler manifold (M, L) , we consider the circle bundle associated to the polarization with the induced transversal holomorphic structure. The space of contact structures compatible with this transversal structure is naturally identified with a bundle, of infinite rank, over the space of Kähler metrics in the first Chern class of L . We show that the Einstein--Hilbert functional of the associated Tanaka--Webster connections is a functional on this bundle, whose critical points are constant scalar curvature Sasaki structures. In particular, when the group of automorphisms of (M, L) is discrete, these critical points correspond to constant scalar curvature Kähler metrics in the first Chern class of L . If time permits, I will explain how we associate a two real parameters family of these contact structures to any ample test configuration and relate the limit, on the central fibre, to a primitive of the Donaldson-Futaki invariant. As a by-product, we show that the existence of cscK metrics on a polarized manifold implies K-semistability