

Insalate di Matematica presents

Special metrics on Kähler manifolds

Stefano Baranzini

SISSA

13.30 - 07/05/2019
Università di Milano-Bicocca
Building U5 - Room 3014

One of the classical problems in Riemannian geometry is to find canonical metrics for a differentiable manifold. In this talk I plan to give a quick overview of the different types of curvature one deals with in differential geometry and then spend a few words on the Einstein equation

$$\text{Ricc}(g) = \lambda g \quad \lambda \in \mathbb{R}$$

Switching to complex geometry I'll review some of the key features of Kähler manifolds which allow to write down the equation in a simpler form. Restricting to the Kahler case between 1976-1978 T. Aubin and S.T.Yau proved that it is always possible to find Kähler-Einstein metrics in the first Chern class of a manifold provided that is either zero or negative. The statement of this theorem is false in case the class is positive and so, in this context, it seems interesting to study also more general objects which are called extremal metrics. They appear as critical points of a functional on the space of Kähler metrics and constitute a broader class than the Kähler-Einstein metrics.

If time permits I plan to give a few examples of extremal metric and talk about obstructions.

Keywords:

differential geometry • Kähler geometry • extremal metrics

"Obvious" is the most dangerous word in mathematics.
- Eric Temple Bell