



Speaker: Xiaoxiao Li
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Monday, March 14, 2016

4:00 PM

229 Hayes-Healy Hall

Title: Kahler Einstein Metrics and Stability

Abstract:

One of the most important questions in Kahler geometry is whether a compact Kahler manifold admits any Kahler Einstein metrics. Since the Ricci form of a compact Kahler manifold represents its first Chern class, there are three different cases: $c_1 < 0$, $c_1 = 0$ and $c_1 > 0$. It has been known since the mid-70's that c_1 being zero or negative is sufficient for the existence of KE metrics. For the remaining case, it turns out that the positivity of the first Chern class is not enough and Yau conjectured that a Fano manifold admits a KE metric iff it is stable in the sense of geometric invariant theory. Tian introduced the notion of K-stability as a candidate for such a stability condition and proved that it is actually necessary. The sufficient part was proved by Chen-Donaldson-Sun and Tian in 2013. In this talk, starting with a brief introduction to finite dimensional GIT, I will explain how these ideas are fit into the story of finding extremal Kahler metrics and how they motivate the reformulation of K-stability given by Donaldson. Finally, I will discuss very briefly the ideas in Chen.