Workshop on singular canonical Kähler metrics on compact and noncompact manifolds

Monday (September 01)

9:00-9:30 **Registration**

9:30-10:30 **Vincent Guedj: Kähler-Ricci flow coming out of metric spaces**

Abstract: We study compact Kähler-Ricci limit spaces, i.e. compact metric spaces which are the Gromov-Hausdorff limit at time zero of smooth Kähler-Ricci flows. We provide a large class of examples of such spaces, whose metric space structure is associated to a positive closed current with geometric singularities. In dimension 1 we extend works of T.Richard and M.Simon, showing that any oriented compact Alexandrov surface with bounded integral curvature and without cusp is the initial datum of a Kähler-Ricci flow. This is joint work with A.Deruelle, H.Guenancia and A.Zeriahi.

11:00-12:00 **Chun-Ming Pan: Pluripotential theory in families and canonical Kähler metrics**

Abstract: This talk aims to explain a method for studying singular canonical metrics in families of singular varieties with a pluripotential theory and a variational approach in families. The talk will focus on the singular Kähler-Einstein metrics on families of Fano varieties. Following a brief review of singular KE metrics and a variational method, I will introduce a notion of convergence of quasi-plurisubharmonic functions in families and the extension of several classical properties under this framework. Then, I will present an openness result of the existence of KE metrics via an analytic method and how to establish uniform a priori estimates in families. This talk is based on joint work with A. Trusiani.

14:00-15:00 **Xu Wang:Toric degeneration, Okounkov body and Ohsawa-Takegoshi extension**

Abstract: This is a joint work (arXiv: 2311.03840) with Yan He and Johannes Testorf. We first explain how to look at the Ohsawa-Takegoshi extension theorem using C-star degeneration. Then we prove certain non-vanishing and jet generation result using the Okounkov body construction of the Toric degeneration. If time permits, we shall also discuss a general Ross-Witt Nyström correspondence version of the Ohsawa-Takegoshi extension.

15:30-16:30 **Jacob Sturm: Hölder estimates for degenerate complex Monge-Ampère equations**

Abstract: We will discuss Hölder estimates for Monge-Ampère equations on singular projective varieties as well as some geometric applications. This is joint work with Bin Guo, Sławomir Kołodziej and Jian Song.