NCTS
National Center for Theoretical Sciences

# The Filtration Method in Diophantine Approximation and K- Stability

TIME | 2023.8/7, 8/8, 8/10 10:00-12:00
Venue | Room 515, Cosmology Building, NTU

Speaker **Min Ru**
University of Houston

Registration

## Course Outline & Descriptions

The filtration method both appeared in the study of Diophantine approximation and the K-stability of Q-Fano varieties. In particular, the so-called beta-constant (the expected vanishing order) appeared in the recent result of Ru-Vojta concerning the height inequality for general divisors on a projective variety, as well as in the so-called Fujita-Li criterion for the K-stability of Q-Fano varieties. This short course intends to present the filtration method, as well as to explore potential connections between these different subjects.

**Day 1** Monday

Bigness and ampleness of the line bundles; Kodaira's embedding theorem; The volume of L and its exrepssion through the Okounkov body, the standard (simple) filtration, the beta constant (the expected vanishing order), the Duistermaat-Heckman measure associated to the filtration and its expected value, the Green-transform, the integral expression of the beta-constant, weight function on a vector space and its one-to-one corresponding to the weighted filtration.

**Day 2** Tuesday

Introduction to Diophantine approximation, Roth's theorem and Schmidt's subspace theorem, the Hilbert and Chow weights, the theorem of Evertse and Ferretti and its proof, the proof of Ru-Vojta theorem using Autissier's filtration.

**Day 3** Thursday

Fujita-Li's criterion for the K-stability of Q-Fano varieties.