



THE HONG KONG UNIVERSITY OF SCIENCE & TECHNOLOGY

Department of Mathematics

SEMINAR ON PURE MATHEMATICS

Toric degenerations of Grassmannians and combinatorial mutations of their polytopes

by

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Abstract

Toric varieties are popular objects in algebraic geometry, as they can be modeled on polytopes and polyhedral fans. This is mainly because there is a dictionary between their geometric properties and the combinatorial invariants of their polytopes. This dictionary can be extended from toric varieties to arbitrary varieties through toric degenerations. In this talk, I will first recall the notion of toric degenerations which generalizes the fruitful correspondence between toric varieties and polytopes to arbitrary varieties. Then I will show some prototypic examples of toric degenerations (of Grassmannians) which are related to Young tableaux and Gelfand-Cetlin polytopes. I will describe how to obtain such degenerations using the theory of Gröbner fans and tropical geometry, and show the relations among their associated Newton-Okounkov bodies.

Date : 7 February 2022 (Monday)

Time : 3:00pm – 4:00pm

Zoom Meeting : <https://hkust.zoom.us/j/4778457656> (Passcode: 20220207)*

All are Welcome!