

## MATH-IMS Joint Colloquium Series The Chinese University of Hong Kong

*This MATH-IMS Joint Colloquium Series in pure mathematics is organized by the Department of Mathematics and the Institute of Mathematical Sciences (IMS) at the Chinese University of Hong Kong. The series focus on all areas of pure mathematics together with theoretical developments and applications.*

**Date:** September 10, 2020 (Thursday)

**Time:** 11am – 12noon (Hong Kong Time)

**Zoom Link:** <https://cuhk.zoom.us/j/98846779826>

### Flag manifolds over semifields *Speaker: Professor Huanchen Bao* *National University of Singapore*

**Abstract:** The study of totally positive matrices, i.e. matrices with positive minors, dates back to 1930s. The theory was generalised by Lusztig to arbitrary split reductive groups using canonical bases, and has significant impacts on the theory of cluster algebras, higher Teichmüller theory, etc.. In this talk, we survey basics of total positivity and explain its generalization to general semifields. This is based on joint work with Xuhua He.

**Bio:** Professor Huanchen Bao obtained his B.S. in Mathematics at Sichuan University in 2010, and his Ph.D. from the Department of Mathematics at University of Virginia in 2015 under the supervision of Prof. Weiqiang Wang. He has been a postdoc in the University of Maryland, College Park from 2015 to 2019. He was a member of the Institute for Advanced Study for the academic year 2016-17, and a visitor of the Max-Planck institute of mathematics for several summers. He joined the Department of Mathematics at NUS since 2019. Prof. Bao's research focuses on the representation theory of Lie algebras, Lie superalgebras, quantum groups, and their connections to geometry and categorification.