



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

This 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 focuses on all areas of pure mathematics together with theoretical developments and applications.

Date: February 25, 2022 (Friday) Time: 11:30AM-12:30PM (Hong Kong Time) Zoom Link: <u>https://cuhk.zoom.us/j/98846779826</u>

The geometry of nilpotent orbits in representation theory

Speaker: Professor Pramod Achar Louisiana State University

Abstract: An elementary fact from linear algebra is that the set of n x n nilpotent matrices (with entries in some field k) has finitely many conjugacy classes. The geometry of these conjugacy classes (also called nilpotent orbits) has played a major role in numerous results in representation theory for at least the past 50 years. I will briefly mention a few of these results, but I will focus primarily on new work relating nilpotent orbits to a special class of representations of $GL_n(k)$ known as tilting modules. This talk is based on joint work with W. Hardesty and S. Riche.

Bio: Prof. Achar received his B.S. in Mathematics with Computer Science at Massachusetts Institute of Technology and later his PhD in Mathematics in 2001 under the supervision of David Vogan. After that, he was an L. E. Dickson Instructor at University of Chicago before he joined Lousiana State University in 2004 where he is currently the Shirley Blue Barton Professor of Mathematics. Prof. Achar's research interest is representation theory, and he has done amazing works on the perverse sheaves and their applications to representation theory. He was elected as a fellow of the American Mathematical Society in 2020.