香 港 大 學
THE UNIVERSITY OF HONG KONG

Institute of Mathematical Research
Department of Mathematics

Frontiers of Mathematics Lecture
Quantizations and unitary representations

Abstract

The study of unitary representations of Lie groups is a classical subject in Representation theory going back to Gelfand and Harish-Chandra. The main, currently open, problem is to classify the irreducible unitary representations of semisimple Lie groups. Thanks to the work of Kirillov and Kostant, the question of classifying the irreducibles fits into Geometric quantization that seeks to produce quantum mechanical systems from classical ones. In my talk I will explain some recent advances in Algebraic (a.k.a. Deformation) quantization of singular symplectic varieties (based on the advances in Birational geometry) and how they help to understand "unipotent" representations, an important class of unitary representations that are expected to serve as building blocks for general ones. This is based on my solo works, a joint monograph with Lucas Mason-Brown and Dmytro Matvieievskyi, and a joint paper with Shilin Yu.



Professor Ivan Losev
Yale University

Date :
December 15, 2026 (Tuesday)

Time :
5:00 – 6:00 pm

Venue :
P3, Chong Yuet Ming Physics Building, HKU

Biography

Ivan Losev is currently a Professor and the Director of Graduate Studies at the Math Department of Yale University. He obtained his Ph.D. in 2007 from the Lomonosov State University in Moscow, Russia. Ernest Vinberg was his thesis advisor. Professor Losev was invited to give a sectional talk at the ICM in 2010 and was awarded Sloan Fellowship in 2014.

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