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The Hong Kong University of Science and Technology

Department of Mathematics

Hong Kong Geometry Colloquium

Introduction to Ecalle's resurgent theory

By

Prof. Sun Shanzhong

Capital Normal University, Beijing, China

Abstract

Ecalle's resurgent theory was originally developed to prove Dulac conjecture about finiteness of limiting cycles in ODEs, and it immediately found applications in quantum mechanics which is now called exact WKB analysis. The theory develops steadily during last three decades with many beautiful algebraic structures unrivaled. Recently, it exerts many activities in quantum field theory and topological string theory. In this talk, I will review the basics of resurgence theory including alien derivatives, transseries, mould calculus.

Date : Saturday, 03 November 2018

Time : 10:00a.m.-11:00a.m.

Venue : Room 2463, Academic Building (Lifts 25/26), HKUST

Topology of moduli spaces via representation theory

By

Prof. Francesco Sala

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University of Tokyo, Japan

Abstract

Geometric representation theory plays a preeminent role in the interactions between algebraic geometry, representation theory, and mathematical physics. In the present talk, I will discuss one of the instances of such interactions, precisely how to describe the cohomology of moduli spaces of (semistable, framed, etc) sheaves on surfaces by using representation theory. In the second part of the talk, I will present an ongoing project with Olivier Schiffmann (arXiv:1801.03482) and Mauro Porta, where the "direction of the interaction" is reversed: we use moduli of sheaves on surfaces to define new algebras.

Date : Saturday, 03 November 2018

Time : 11:20a.m.-12:20p.m.

Venue : Room 2463, Academic Building (Lifts 25/26), HKUST

All are welcome !

Light refreshment will be provided at Room 3493 from 11:00 am to 11:20 am