Cleveland State University
College of Science

COLLOQUIUM

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Differential Equations and Monodromy Problems

Friday February 14th at 3pm in RT 1516

Bio: Dr. Gautam is currently an Assistant Professor in the Department of Mathematics at The Ohio State University where he has been a faculty member since 2017. He received his Ph.D. from Northeastern University in 2011 followed by a Postdoctoral Appointment at Columbia University from 2011-2015. He then became a Research Associate at Perimeter Institute of Theoretical Physics in Waterloo, ON (Canada). His research interests include Cluster Algebras, Classical and Quantum Integrable Systems, Flat Connections, Quantum Groups, Representation Theory, and Braid Groups.

Abstract: Differential equations were introduced in the mathematical world by Newton and Leibniz, around the turn of the 18th century. Ever since, they have been studied from various perspectives, and contributed to the development of many beautiful theories. The notion of monodromy was introduced by Weierstrass in the latter half of the 19th century. It has been used in the works of many mathematicians as a powerful machinery to produce invariants of differential equations. Recent developments in mathematical physics, enumerative geometry and representation theory have discovered numerous new families of differential equations. The problem of computing their monodromy has led to fruitful new directions of research. In this talk I will give an overview of some of these topics of interest, and a sample of connections they have uncovered, a lot of them still conjectural.

Refreshments at 2:30pm in RT 1517