Colloquium

University of Notre Dame
Department of Mathematics

Speaker: Brian Hall

University of Notre Dame

Will give a lecture entitled

Heat flow on polynomials with connections to random matrix theory

Date: Wednesday, May 8, 2024
Time: 4:00 PM
Location: 129 Hayes-Healy Hall
Departmental Tea: Tea in Room 257 (lounge in Hurley Hall) at 3:30 p.m.

Abstract:

Here is a simple question with a surprisingly rich answer: How do the roots of a polynomial change as the polynomial evolves according to the heat equation? The simplest case of this question concerns the backward heat flow on polynomials with all real roots. In this case, an old theorem of Polya and Benz says that the roots will remain real. Much more recent results tell us how these real roots evolve in the high-degree limit—and there is a surprising connection to random matrix theory. Things become even more interesting when we study the heat flow (forward or backward) on polynomials with complex roots. I will present some recent conjectures and rigorous results on this question. This is joint work with Ching Wei Ho, Jonas Jalowy, and Zakhar Kabluchko. The talk will be self-contained and have lots of pictures and animations.

Brian Hall - University of Notre Dame