

Colloquium

University of Notre Dame
Department of Mathematics

Dhruv Mubayi - University of Illinois at Chicago

Speaker: Dhruv Mubayi
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Will give a lecture entitled

Recent advances in Ramsey theory

Date: Wednesday, November 13, 2019

Time: 4:00 PM

Location: 229 Hayes-Healy Hall

Departmental Tea: Tea in Room 257 (lounge in Hurley Hall) at 3:30 p.m.

Abstract:

Ramsey theory studies the paradigm that every sufficiently large system contains a well-structured subsystem. Within graph theory, this translates to the following statement: for every positive integer s , there exists a positive integer n so that for every partition of the edges of the complete graph on n vertices into two classes, one of the classes must contain a complete subgraph on s vertices. Beginning with the foundational work of Ramsey in 1928, the main question in the area is to determine the smallest n that satisfies this property. For many decades, randomness has proved to be the central idea used to address this question. Very recently, we proved a theorem which suggests that “pseudo-randomness” and not complete randomness may in fact be a more important concept in this area. This new connection opens the possibility to use tools from algebra, geometry, and number theory to address the most fundamental questions in Ramsey theory. This is joint work with Jacques Verstraete.