

Colloquium

University of Notre Dame
Department of Mathematics

Alexander Volberg - Michigan State

Speaker: Alexander Volberg

Michigan State

Will give a lecture entitled

Poincaré inequalities on Hamming cube and related combinatorial and probabilistic problems.



Date: Wednesday, February 26, 2020

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:

Geometric inequalities on Hamming cube imply corresponding isoperimetric inequalities in Gaussian spaces. Inequalities in discrete setting (on Hamming cube) are usually more difficult and more deep. In particular, Poincaré inequalities on Hamming cube give sharp lower estimates for the product measure of the boundaries of arbitrary sets of Hamming cube. Such estimates were used by Margulis in his famous network connectivity theorem. We will survey such estimates obtained by Margulis, Bobkov, Ledoux, Lust-Piquard. Recently the constant in L^1 discrete Poincaré inequality was improved. The sharp constant remains unknown (unlike the Gaussian case, where it was found by Cheeger, (also by Maurey—Pisier and then Ledoux), but we will show the idea of how to improve this constant in the Hamming cube situation.