Felix Klein Seminar

UNIVERSITY OF NOTRE DAME
Department of Mathematics

Speaker: Dominic Dotterrer
University of Toronto

Thursday, February 23, 2012
2:00 PM
125 Hayes-Healy Hall

Title: Isoperimetric problems in cellular complexes

Abstract:

In the last five years or so, a number of applications of isoperimetric-type estimates in combinatorial geometry and topology have surfaced. As it turns out, these estimates can tell us about phase transitions in the topology of random simplicial complexes, and also provide information about the geometric and combinatorial complexity of (and even obstructions to) maps of complexes to Euclidean spaces.

The talk will be in three parts. I will begin by explaining these geometro-topological applications in more detail. Then I will sketch a geometric proof of the combinatorial isoperimetric inequality in the hypercube. I will finish by describing an interesting family of cellular cycles which turn out to be isoperimetric minimizers in the cube.