

# Math Department Colloquium

February 5, 2008

**Speaker:** Stefan Wenger

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**Title:** Isoperimetric inequalities and the large scale geometry of metric spaces

**Abstract:** Isoperimetric problems have been widely studied in various contexts and appear in areas such as analysis, geometry and geometric group theory. A suitable framework for their study is given by the theory of currents (in metric spaces), which provides powerful tools for attacking area-minimization problems.

Isoperimetric inequalities can in particular be used to study the large scale geometry of Riemannian manifolds and, more generally, singular metric spaces. This will be the focus of the talk, in which we will survey both old and recent results. Among other things, we will present an optimal theorem which states that from the point of view of isoperimetric inequalities, nothing exists between Euclidean space and spaces of strictly negative curvature on a large scale, or more generally Gromov hyperbolic spaces. This generalizes and strengthens previous theorems of Gromov and others.