

ANALYSIS AND DIFFERENTIAL GEOMETRY
SEMINAR

*Total curvature and the isoperimetric inequality: Proof of the
Cartan-Hadamard conjecture*

Mohammad Ghomi
Georgia Institute of Technology

Abstract: The classical isoperimetric inequality states that in Euclidean space spheres provide unique enclosures of least perimeter for any given volume. In this talk we show that this inequality also holds in spaces of nonpositive curvature, known as Cartan-Hadamard manifolds, as conjectured by Aubin, Gromov, Burago, and Zalgaller. The proof is based on a comparison formula for total curvature of level sets in Riemannian manifolds, and estimates for the smooth approximation of the signed distance function, via inf-convolution and Reilly type formulas among other techniques. Immediate applications include sharp extensions of Sobolev and Faber-Krahn inequalities to spaces of nonpositive curvature. This is joint work with Joel Spruck.

Tuesday, September 17, 2019, 4:00 pm
PAIS 220

PAIS Building (36 Eagle Row, Atlanta, GA 30322)

MATHEMATICS
EMORY UNIVERSITY