

Total curvature and the isoperimetric inequality

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The classical isoperimetric inequality states that in Euclidean space spheres provide enclosures of least perimeter for any given volume. According to the Cartan-Hadamard conjecture, this inequality may be generalized to spaces of nonpositive curvature. In this talk we discuss an approach to proving this conjecture via a comparison formula for the total curvature of level sets of functions on manifolds. In particular we will show that the conjecture holds when the variation in the curvature of the ambient space is small. This is joint work with Joel Spruck.