

A weighted sharp isoperimetric inequality in substatic manifolds

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I will discuss recent advances in the geometric analysis of noncompact substatic manifolds. These spaces satisfy a curvature condition involving a potential function that vastly generalizes nonnegative Ricci curvature. Moreover, the zero-level set of such potential provides a minimal boundary for such manifolds. Substatic manifolds naturally arise as initial data sets for static spacetimes obeying Einstein's equations. I will mainly focus on a sharp isoperimetric inequality where the volume measure is weighted with the potential, that is new also in model situations such as Schwarzschild. This is a joint work with Stefano Borghini (Trento).