Geometric inequalities through p-capacitary potentials

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We show that the level set flow of p-capacitary potential of a domain can be employed to deduce sharp geometric inequalities. The main technical tool is a monotone quantity along this level set flow, first provided for the electrostatic potential of a domain in $\mathbb{R}^n$ by V. Agostiniani and L. Mazzieri. This new strategy is very flexible, and we are going to see that leads to new sharp Willmore-type and Minkowksi-type inequalities in relevant families of noncompact Riemannian manifolds with nonnegative Ricci curvature. A combination of our inequalities with the Mean Curvature Flow also provides new Isoperimetric Inequalities on these manifolds.

Based on joint works with V. Agostiniani, L. Benatti, L. Mazzieri and A. Pinamonti.

Keywords: geometric inequalities, p-Laplacian, Ricci curvature.