

Abstract

On a Class of Weighted Isoperimetric Inequalities [†]

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Abstract: We study a class of isoperimetric problems on \mathbb{R}^N with respect to weights that are powers of the distance to the origin. We consider different weights in the volume and in the perimeter. We investigate cases in which, among all smooth sets Ω in \mathbb{R}^N with fixed weighted measure, the ball centered at the origin has minimum weighted perimeter. The results also imply a weighted Pólya-Szegő principle. In turn, we establish radially of optimizers in some Caffarelli-Kohn-Nirenberg inequalities, and we obtain sharp bounds for eigenvalues of some nonlinear problems.



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