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Rigidity results for measurable sets

Monday, July 4, 2022 9:30 AM (1 hour)

Let $\Omega \subset \mathbb{R}^d$ be a set with finite Lebesgue measure such that, for a fixed radius $r > 0$, the Lebesgue measure of $\Omega \cap B_r(x)$ is equal to a positive constant when x varies in the essential boundary of Ω. We prove that Ω is a ball (or a finite union of equal balls) provided it satisfies a nondegeneracy condition, which holds in particular for any set of diameter larger than r which is either open and connected, or of finite perimeter and indecomposable. This is a joint work with Ilaria Fragalà.

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