ON EXTENDED SINGULAR SET OF POTENTIALS

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Abstract. We describe a class of potentials \( v = G \ast f \), such that if \( x_0 \) is from extended singular set of \( v \), that is, \( r^{-N} \int_{B_r(x_0)} v(x) \, dx \to +\infty \) for some sequence \( r \to 0 \), then necessarily \( v(x_0) = \infty \). This class includes Bessel potentials and Riesz potentials. The result was exploited in our previous paper in order to show that singular dimension of the Bessel potential space \( L^{\alpha,p}(\mathbb{R}^N) \) (that is, the supremum of Hausdorff’s dimension of extended singular sets, taken over all functions from the space) is equal to \( N - \alpha p \), provided \( \alpha p \leq N \).

Key words and phrases: Singular set, potentials.

REFERENCES