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**$L^2$ -norm and estimates from below for Riesz transforms on Cantor sets.** (English)

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Authors' abstract: The aim of this paper is to estimate the  $L^2$ -norms of vector-valued Riesz transforms  $R_\nu^s$  and the norms of Riesz operators on Cantor sets in  $\mathbb{R}^d$ , as well as to study the distribution of the values of  $R_\nu^s$ . Namely, we show that this distribution is “uniform” in the following sense. The values of  $|R_\nu^s|^2$  which are comparable with its average value are present on a “big” portion of a Cantor set. We apply these results to give examples demonstrating the sharpness of our previous estimates for the set of points where the Riesz transform is large, and for the corresponding Riesz capacities. The Cantor sets under consideration are different from the usual corner Cantor sets. They are constructed by means of a certain process of regularization introduced in the paper.

Reviewer: [Niels Jacob \(Swansea\)](#)

**MSC:**

- [42B20](#) Singular and oscillatory integrals (Calderón-Zygmund, etc.)
- [30C85](#) Capacity and harmonic measure in the complex plane
- [31B15](#) Potentials and capacities, extremal length and related notions in higher dimensions
- [28A78](#) Hausdorff and packing measures
- [28A80](#) Fractals

Cited in **5** Documents

**Keywords:**

singular integral; Riesz transform; Cantor set; analytic capacity

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