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Hausdorff and packing measures of Cantor sets associated with series

Given a convergent infinite series of positive terms a_n, the set of all possible subsums forms a perfect and compact set. If in addition the series satisfies a fast decay condition, the resulting set, C_a, is totally disconnected.

Manual Morán studied these C_a, extended the construction to $\mathbb{R}^d$, and gave some results on the Hausdorff dimension and measure. In this talk, I will discuss our extension of his construction and present results regarding the Hausdorff and packing dimension and measure of C_a. I will also present some results concerning the existence of subsets of C_a of a given (smaller) dimension and measure. In particular, we show that for all $d < dim(C_a)$ there exist a subsequence b_n of a_n with $dim(C_b) = d$. This is joint work with Kathryn Hare and Leandro Zuberman