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The Erdős Similarity Conjecture and Rajchman measures

The Erdős similarity conjecture asserts that every infinite subset of the real line can be avoided by a measurable set of positive measure: the latter contains no translated and rescaled copy of the former. In this talk, I will prove the conjecture for sets supporting a Rajchman probability measure—that is, a probability measure whose Fourier transform tends to zero at infinity. More precisely, for any such set A and any $\varepsilon > 0$, we construct a closed, 1-periodic, nowhere dense set containing no affine copy of A, yet having measure at least $1 - \varepsilon$ in every interval of length 1.

This talk is based on a joint work with Natalia Mora Cuellar, Alex Iosevich, Neeraja Kulkarni and Ignacio Rojas Aravena.

Arxiv link: https://arxiv.org/abs/2609.04456