ARITHMETIC PROGRESSIONS IN SETS OF FRACTIONAL DIMENSION

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Abstract: Let $E \subset \mathbb{R}$ be a closed set of Hausdorff dimension α. We prove that if α is sufficiently close to 1, and if E supports a probability measure obeying appropriate dimensionality and Fourier decay conditions, then E contains non-trivial 3-term arithmetic progressions. (Joint work with Malabika Pramanik.)