Large Sets Without Fourier Restriction Theorems

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Abstract
Fourier restriction inequalities associated to submanifolds form an important area of research in harmonic analysis and are connected to various other problems in mathematics. About 25 years ago, Mockenhaupt and Mitsis showed that the restriction of the Fourier transform to a fractal (instead of a submanifold) can also behave interestingly. But the class of fractals is extensive and necessary conditions for Fourier restriction inequalities in this setting are not well-understood. In this direction, we will show that all Fourier restriction sets avoid a universal set of full Hausdorff dimension.