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Pushes of fractal measures on periodic horocycles

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We examine pushes of fractal measures on certain periodic horospherical orbits with the aim to study Diophantine approximation on fractals. I will present an ongoing collaboration with Osama Khalil and Barak Weiss, where we partially extend earlier results by Khalil and myself, more explicitly proving ineffective equidistribution of pushes of the fractal measure coming from a special class of rational self-similar rotation-free iterated function systems. Notably, the class contains the Hausdorff measure on the middle third Cantor set which isn't covered by earlier work on this subject. The proof uses a partial classification of stationary measures for a random walk corresponding to the iterated function system on an S-arithmetic homogenous space. I will explain the main theorems, some of the ideas of the proof, and some of the differences to existing results on stationary measures.

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