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Tempered FBM with Reflecting Walls

Fractional Brownian Motion (FBM) is a Gaussian stochastic process with long-range correlations and a paradigmatic model for anomalous diffusion. For FBM confined by reflecting boundaries, recent work [1] demonstrated unusual accumulation and depletion of particles close to the walls. In many applications of FBM to physics, chemistry, and beyond, the long-range correlations are cut off (tempered) beyond a certain time scale [2]. Here, we study the behavior of tempered FBM in the presence of reflecting walls. More specifically, we analyze the probability density of tempered FBM on a one-dimensional interval between two reflecting wall.

Zachary Miller is a junior dual major in math and physics who has been doing research work on this project continuously since his sophomore year. He has remained involved on campus in leadership and honors organizations as well as he has been the president of the Society of Physics students since his sophomore year. He has had presented on this very same work to March Meeting, an international physics conference. He is hoping to complete a paper on this work by the end of this semester.