

## Abstract

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### *Non-ergodic delocalization in the Rosenzweig-Porter model*

*Joint with Simone Warzel*

The Rosenzweig-Porter model, which linearly interpolates a random diagonal matrix and the Gaussian Orthogonal Ensemble, has recently received a renewed surge of interest related to the many-body localization transition. In this context, the model provides a very basic example of a non-ergodic delocalized phase, in which eigenfunctions spread to a large number of sites but not uniformly over the entire volume. We prove this phenomenon using martingale estimates along the characteristic curves of a stochastic advection equation satisfied by resolvent.