Applying Discrete Wigner Functions to capture MBL in extended Phase Space with dTWA JONATHAN WURTZ, ANATOLI POLKOVNIKOV, SHAINEN DAVIDSON, Boston University — Phase-space descriptions of quantum systems are an equivalent way to describe dynamics of a quantum system. Here, we use discrete Wigner Functions in extended phase space to describe approximate evolution of a disordered spin lattice to capture MBL through phase-space sampling of a positive-definite quasiprobability distribution. Our approximation is controlled as a clustering of sites, which expands the phase space with extra quantum degrees of freedom from mean-field classical evolution, improving the accuracy of the expansion, known as the Truncated Discrete Wigner Approximation (dTWA).

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