Efficient Cluster Algorithm for Resistively Shunted Josephson Junctions PHILIPP WERNER, MATTHIAS TROYER, ETH Zurich — We present a cluster algorithm for resistively shunted Josephson junctions which dramatically improves sampling efficiency. The algorithm combines local updates in Fourier space with rejection-free cluster updates which exploit the symmetries of the Josephson coupling energy. As an application, we consider the superconductor-to-insulator transition in a single junction and the phase diagram of a recently proposed two-junction model with charge relaxation.

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