

Abstract Submitted
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Quantum Phase Slips in 1D Josephson Junction arrays JACK LIDMAR, KTH Stockholm — One-dimensional arrays of Josephson junctions can undergo a zero temperature superconductor-insulator quantum phase transition by tuning the Josephson coupling. Quantum phase slips (QPS) play the key role in this transition: In the superconducting regime they are very rare, while in the insulating Coulomb blockade regime, they proliferate and destroy the phase coherence. We derive an expression for the QPS rate that is amenable to quantum Monte Carlo simulations and perform calculations in a realistic model of an array over a wide range of parameters including the transition region. In particular we can determine the scaling properties of the QPS rate at the transition.

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