Theory of a smeared quantum phase transition$^1$ JOSE HOYOS, Duke University, THOMAS VOJTA, University of Missouri-Rolla — We present a comprehensive strong-disorder renormalization group theory of the quantum phase transition in the dissipative random quantum Ising chain. For Ohmic dissipation, we solve the renormalization group flow equations analytically, yielding asymptotically exact results for the low-temperature properties of the system. We find that the interplay between quantum fluctuations and Ohmic dissipation destroys the quantum critical point by smearing. We also determine the phase diagram and the behavior of observables in the vicinity of the smeared quantum phase transition.

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