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Infinite-randomness quantum critical points induced by dissipation CHETAN KOTABAGE, Missouri University of Science and Technology, JOSE HOYOS, Duke University, THOMAS VOJTA, Missouri University of Science and Technology — We develop a strong-disorder renormalization group to study quantum phase transitions with continuous $O(N)$ symmetry order parameters under the influence of both quenched disorder and dissipation. For Ohmic dissipation, as realized in Hertz' theory of the itinerant antiferromagnetic transition or in the superconductor-metal transition in nanowires, we find the transition to be governed by an exotic infinite-randomness fixed point in the same universality class as the (dissipationless) random transverse-field Ising model. We determine the critical behavior and calculate key observables at the transition and in the associated quantum Griffiths phase. We also briefly discuss the cases of superohmic and subohmic dissipation.

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