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Rescuing a Quantum Phase Transition with Quantum Noise[1] GU ZHANG, Duke Univ, EDUARDO NOVAIS, UFABC, HAROLD BARANGER, Duke Univ — We show that placing a quantum system in contact with an environment can enhance non-Fermi-liquid correlations, rather than destroying quantum effects as is typical. The system consists of two quantum dots in series with two leads; the highly resistive leads couple charge flow through the dots to the electromagnetic environment (noise). The similarity to the two impurity Kondo model suggests that there will be a quantum phase transition between a Kondo phase and a local singlet phase. However, this transition is destabilized by charge tunneling between the two leads. Our main result is that sufficiently strong quantum noise suppresses this charge transfer and leads to stabilization of the quantum phase transition. We present the phase diagram, the ground state degeneracy at the four fixed points, and the leading temperature dependence of the conductance near these points.

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