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Thermal and electrical transport in a random dissipative quantum system controlled by an infinite randomness critical point ADRIAN DEL MAESTRO, BERND ROSENOW, MARKUS MUELLER, SUBIR SACHDEV, Harvard University — The complicated interplay between quantum fluctuations and disorder in the vicinity of a quantum phase transition can have drastic effects and lead to exotic Griffiths phases and the flow to infinite randomness. We present a study of a dissipative Hertz-like theory in the presence of quenched disorder which may describe the quantum phase transition between a superconductor and metal in ultra narrow metallic wires tuned by an external source of pair-breaking. By finding a numerical solution to the large-N self-consistency equations for real-space chains we are able to directly compute the finite temperature thermal and electrical d.c. conductivities throughout the quantum critical regime. From an analysis of the typical and average correlation functions we find evidence for dynamically activated scaling in accord with recent strong disorder real space renormalization group calculations.

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