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Unified scaling picture for electronic transport in two-dimensions at low temperatures[1] DAVID NEILSON, University of Camerino, D.J. WALLACE GELDART, Dalhousie University — We focus on generic features of the phase diagram for the 2D metal-insulator transition phenomenon. The diagram has a line of critical points corresponding to a conducting region (but not necessarily Fermi-liquid-like). The line terminates at a critical end point which controls an extended quantum critical region encompassing not only the conventional quantum critical sector but also a wide range of low temperature data extending deep into the insulator region. This permits us to unify analysis of transport data from the insulating region and the quantum critical sector, and allows us to determine the z and ν critical exponents from a single experiment. We present strong evidence for the connection between data in the quantum critical sector and insulating critical region, pointing to the presence of a quantum critical point.

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