

Abstract Submitted
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Phase transitions in escape processes of metal nanowires¹

JÉRÔME BÜRKI, University of Arizona, CHARLES STAFFORD, University of Arizona, DANIEL STEIN, New York University — Thermally induced conductance jumps of metal nanowires are modeled using stochastic Ginzburg-Landau field theories. The activation rate displays nontrivial dependence on nanowire length, and undergoes first- or second-order-like transitions, with a critical length proportional to the wire radius. Several experimental manifestations of the predicted phase transition are identified, including the temperature- and radius-dependence of peak heights in conductance histograms, and the length dependence of I-V characteristics of gold nanowires.

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