Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Distribution of conductance for Anderson insulators: A theory with a single parameter ANDREW DOUGLAS, Santa Fe College, PETER MARKOS, Institute of Physics, Slovak Academy of Sciences, KHANDKER MUTTALIB, University of Florida — We obtain an analytic expression for the full distribution of conductance for a strongly disordered two and three-dimensional conductor within a perturbative approach based on the transfer-matrix formulation. Our results confirm the numerical evidence that the log-normal limit of the distribution is not reached even in the deeply insulating regime. We show that the variance of the logarithm of the conductance scales as a fractional power of the mean, while the skewness changes sign as one approaches the Anderson metal-insulator transition from the deeply insulating limit, all described as a function of a single parameter. The approach suggests a possible single parameter description of the Anderson transition that takes into account the full nontrivial distribution of conductance.

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Date submitted: 19 Nov 2009 Electronic form version 1.4