Quantum thermal conductance of quasi-one-dimensional insulating rods PADRAIG MURPHY, JOEL MOORE, UC Berkeley — At low temperatures the thermal conductance of mesoscopic quasi-one-dimensional systems is determined by the transmission probability of various propagating modes. We study the effect of disorder on the quantum thermal conductance of thin insulating rods by a dynamical transfer-matrix method valid in the harmonic approximation. In particular we examine the dependence of heat transmission and localization on the width of the system, the degree of disorder, and the temperature. Increasing the wire width changes not only the number of propagating modes, but also the behavior of each mode, in a fashion quite different from electronic localization in one dimension.

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