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The geometrically-averaged density of states as a measure of localization[1] RACHEL WORTIS, YUN SONG, WILLIAM ATKINSON, Trent University — Motivated by current interest in disordered systems of interacting electrons, we examine the use of the geometrically-averaged density of states, $\rho_g(\omega)$, as an order parameter for the Anderson transition. In infinite systems, when $\rho_g(\omega)$ vanishes, while the density of states remains nonzero, the states at energy ω are localized. In the context of noninteracting finite-size systems we show that a finite energy resolution, a common feature of many-body calculations, changes the scaling of $\rho_g(\omega)$ such that the critical disorder is over-estimated. Furthermore we demonstrate that even in infinite systems a decline in $\rho_g(\omega)$ with increasing disorder strength is not uniquely associated with localization.

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