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Light Transport in Disordered Media with PT-symmetry[1] SAMUEL KALISH, ZIN LIN, TSAMPIKOS KOTTOS, Wesleyan University — The localization properties of randomly layered optical media with $\mathcal{PT}$-symmetric refraction index are studied both theoretically and numerically using the transfer-matrix method. The transmission coefficient decays exponentially as a function of the system size, with a rate $\xi_\gamma(W)^{-1} = \xi_0(W)^{-1} + \xi_\gamma(0)^{-1}$, where $\xi_0(W)$ is the localization length of the equivalent passive disordered system and $\xi_\gamma(0)$ is the attenuation/amplification length of the corresponding perfect system with combined gain/loss refraction index profile. While transmission processes are reciprocal to left and right incident waves, one-sided reflection is found.

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