Speckle Statistics of Localized Waves in Random Media ABE
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Physics, Queens College of City University of New York — The onset of single-channel transport in multi-channel disordered systems due to Anderson localization
is observed in speckle pattern statistics. These statistics have been gathered with
microwave radiation transmitted through an ensemble of quasi-1D random dielectric samples of length two times the localization length. In a single-channel regime,
the transmission speckle pattern exhibits a "perfect memory" effect: A shift in the
direction and/or polarization of the incoming wave leaves nearly unchanged the positions and relative brightness's of speckles, while leading to large fluctuations of
total transmission. The probability distribution of single-channel microwave transmittance (conductance) as determined from the measurements of speckle intensity
statistics is compared to those predicted for localized waves.

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