Abstract Submitted
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Scattering a pulse from a chaotic cavity: Transitioning from algebraic to exponential decay[1] JAMES HART, THOMAS ANTONSEN, EDWARD OTT, University of Maryland — The ensemble averaged power scattered in and out of lossless chaotic cavities (such as microwave resonators, acoustic cavities and quantum dots) decays as a power law in time for large times. In the case of a pulse with a finite duration, the power scattered from a single realization of a cavity closely tracks the power law ensemble decay initially, but eventually transitions to an exponential decay. In this presentation, we explore the nature of this transition in the case of coupling to a single port. We find that for a given pulse shape, the properties of the transition are universal if time is properly normalized. We define the crossover time to be the time at which the deviations from the mean of the reflected power in individual realizations become comparable to the mean reflected power. We demonstrate numerically that, for randomly chosen cavity realizations and given pulse shapes, the probability distribution function of reflected power depends only on time, normalized to this crossover time. Paper: http://arxiv.org/abs/0810.1664

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