

Abstract Submitted
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Non-Perturbative approach to the distribution of zeros of the S-matrix of lossy chaotic cavities and its applications to coherent perfect absorption¹ YAN FYODOROV, King's College London, Department of Mathematics, SUWUN SUWUNNARAT, TSAMPIKOS KOTTOS, Wesleyan Univ — We employ the Random Matrix Theory framework to calculate the scattering matrix zeros of a chaotic cavity with a localized absorber embedded in it. Our approach extends beyond the perturbative weak-coupling limit of the cavity with the continuum via a finite number M of open channels and provides an insight for the optimal amount of loss needed to realize a chaotic coherent perfect absorbing trap. Our theoretical results are tested against and found to be in excellent agreement with simulations for two types of chaotic systems: a complex network of coupled resonators and quantum graphs with one absorption center.

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