**Long-range correlations in rectangular cavities containing point-like perturbations**

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We investigated the short- and long-range correlations of the fluctuation of spectra of flat, rectangular microwave cavities simulating quantum billiards [1]. Two microwave antennas were introduced into the cavity to measure the cavity spectra. The antennas act as point-like perturbations. The experimental data are well described by a model applicable to rectangular billiards containing zero-range perturbations [2]. We consider statistical measures for both, short-range correlations such as nearest-neighbor spacing distribution and long-range correlations such as the Dyson-Mehta statistic (Δ3), and analyzed power spectra. Our experimental and numerical results show a transition from Poisson statistics towards semi-Poisson statistics with increasing frequency. Indeed, in the uppermost frequency range achieved in the experiments, the spectral properties are surprisingly well described by semi-Poisson statistics. Finally, we conclude that in order to obtain statistics close to Poisson statistics, i.e., scattering length β ≥1 for the fluctuations in the spectra of microwave cavities with classically integrable dynamics, the lengths of the antennas have to be maximally minimized.

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