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

Vitalii Yunko, Małgorzata Białous, Szymon Bauch, Michał Ławniczak, Barbara Dietz, and Leszek Sirko
Institute of Physics, Polish Academy of Sciences, Al. Lotników 32/46, 02-668 Warszawa, Poland

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.

This work was partially supported by the Ministry of Science and Higher Education grant No. UMO- 2013/09/D/ST2/03727 and the EAgLE project (FP7- REGPOT-2013-1, Project Number: 316014).

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