

Quantum correlations: Hamiltonian chaos vs simple graphs

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One of the most relevant problems in quantum chaos is the semiclassical description of quantum correlation functions in systems with chaotic classical analogue. One such quantity is the spectral form factor, other examples with relevance to mesoscopic physics will be given in the talk. The main difficulty is the summation over pairs of correlated classical trajectories. We review recent progress in this field and explain how certain aspects of this problem can be studied using simple quantum graphs as model systems.

[1] M. Puhlmann, H. Schanz, T. Kottos and T. Geisel, *Europhys. Lett.* 69 (2005) 313.

[2] H. Schanz, M. Puhlmann and T. Geisel, *Phys. Rev. Lett.* 91 (2003) 134101.

[3] G. Berkolaiko, H. Schanz and R. S. Whitney, *Phys. Rev. Lett.* 88 (2002) 104101.

[4] H. Schanz and U. Smilansky, *The Electronic Journal of Combinatorics* 8 (2001) R16.

[5] H. Schanz and U. Smilansky, *Phys. Rev. Lett.* 84 (2000) 1427.