

Effects of time-reversal symmetry violation in quantum graphs

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The talk concerns the ways in which the violation of time-reversal invariance in quantum graphs coming from the choice of the vertex coupling conditions can be manifested in spectral properties. We focus on two cases. One is of spectral geometry type; we ask about the topology of a finite graph with a particular vertex coupling of the indicated type which optimizes the eigenvalues. The other is related to quantum chaos: we demonstrate an example of a graph the properties of which, both in the eigenvalue spacing distribution and the form factor, differ from what is expected in this situation. The results come from a common work with Ram Band, Divya Goel, Jonathan Rohleder and Aviya Strauss.