

The Wigner Band Random Matrix Model: Studied from the View Point of a Generalization of Brillouin- Wigner Perturbation Theory

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Abstract: The Wigner band random matrix model is studied by making use of a generalization of Brillouin-Wigner perturbation theory. Energy eigenfunctions are shown to be divided into perturbative and nonperturbative parts. A relation between the average shape of eigenstates and that of the so-called local spectral density of states (LDOS) is derived by making use of some properties of energy eigenfunctions drawn from numerical results. Several perturbation strengths predicted by the perturbation theory are found to play important roles in the variation of the shape of the LDOS with perturbation strength.

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Key words: generalization of perturbation theory, energy eigenfunction, local spectral density of states

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