Localization in quasi-one-dimensional wires: correlations of the local density of states

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We address the problem of Anderson localization in quasi-one-dimensional wires, which, in the limit of a large number of channels may be described in terms of a supersymmetric non-linear sigma model. In the unitary symmetry class, we report a calculation of the correlation function of the local density of states, at different spatial positions and at a small energy difference. The result is expressed as a "quasiclassical" expansion in energy difference, which involves both energy and its logarithm. To the leading order, we find the universal behavior coinciding with the known result for strictly one-dimensional chains: the statistics of a single localized wave function at short distances, and level repulsion at the Mott scale. Corrections at finite energy difference are, however, non-universal: they differ from the strictly one-dimensional expressions.

Ref: D.A.Ivanov, P.M.Ostrovsky, and M.A.Skvortsov,
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