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QUANTUM FRONTS AND RANDOM MATRICES

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Abstract:

One-dimensional free fermions are studied with emphasis on propagating fronts emerging from a step initial condition. The probability distribution of the number of particles at the edge of the front is determined exactly. It is found that the full counting statistics coincides with the eigenvalue statistics of the edge spectrum of matrices from the Gaussian unitary ensemble. The correspondence established between the random matrix eigenvalues and the particle positions yields the order statistics of the right-most particles in the front and, furthermore, it implies their subdiffusive spreading.