

Solving interacting particle systems by Fourier-like transforms

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I will discuss interacting particle systems on the line which are solvable by the coordinate Bethe ansatz (a classical example is the Asymmetric Simple Exclusion Process). The main focus of the talk is on properties of eigenfunctions and associated Fourier-like transforms coming from these particle systems. The most general such eigenfunctions are certain rational deformations of the Hall-Littlewood symmetric polynomials. They are associated with the q -Hahn particle system, and also with higher spin vertex models on the lattice. The spectral theory allows to obtain explicit formulas for particle systems with arbitrary initial configuration.