

Generalized Hydrodynamics for the Volterra lattice

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Despite needing a complete mathematical foundation, the theory of Generalized Hydrodynamics has been used to obtain precise approximations of the correlation functions for several integrable models. For example, H. Spohn used this theory to compute the correlation function of the Toda lattice.

We consider another integrable model, namely the Volterra lattice. We introduce the Generalized Gibbs Ensemble for this lattice and relate it to the Anti-symmetric β ensemble, a classical random matrix model for anti-symmetric matrices. This connection allows us to explicitly compute the density of states for the Volterra lattice in terms of the random matrix ensemble one. Given this density, we can apply the theory of GHD to obtain a linear approximation of the correlation function for our model.

This talk is mainly based on the following paper:

- G. M., \textit{Generalized Hydrodynamics for the Volterra lattice: ballistic and nonballistic behavior of correlation functions.} arXiv preprint: 2404.08499

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