

Contribution ID: 42

Type: not specified

Talk: Thermal form factor series for dynamical two-point functions of local operators in integrable quantum chains

Thursday 9 February 2023 18:20 (55 minutes)

Evaluating a lattice path integral in terms of the spectral data and matrix elements of a suitably defined qunatum transfer matrix we obtain a thermal form factor series' for the dynamical two-point functions of local operators in fundamental Yang-Baxter integrable models at finite temperature and, in the same way, in many other physically relevant settings. We shall consider in some detail the case of spin-zero operators of the XXZ chain. In this case the matrix elements factorize into auniversal part' and an operator-dependent part that is a product of two 'thermal form factors'. The latter satisfy a discrete form of the reduced qKZ equation, have multiple integral representations and can be evaluated with the fermionic basis approach. In this approach the physical content enters through only two functions ρ and ω . For the XXZ chain in the antiferromagnetic massive regime at zero temperature we have obtained explicit expressions for the universal part and for the functions ρ an ω in terms of

known special functions of basic hypergeometric and q-Gamma type. Using these results we obtain explicit series representations, e.g., for the dynamical two-point functions of two magnetization operators or of two spin-current operators. The latter determine the spin conductivity of the model.

Presenter: Prof. GOEHMANN, Frank (University of Wuppertal)