MP 4: Quantum Field Theory I

Time: Monday 15:00–15:40 Location: HL 102

MP 4.1 Mon 15:00 HL 102

An approach to a 2-dimensional weakly interacting thermal QFT — •Ian Koot — Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany

It is known that one can construct a 2-dimensional integrable quantum field theory out of a 2-dimensional (non-local) free scalar fermionic field theory using Tomita-Takesaki theory. We discuss an approach to extend this construction towards a thermal quantum field theory, with the aim of constructing a weakly interacting quantum field theory at nonzero temperature.

MP 4.2 Mon 15:20 HL 102

Wave Function Renormalizations in Non-Local Field Theories — •Johannes Thürigen — Mathematisches Institut, Universität Münster

In combinatorially non-local field theories, propagating degrees of freedom interact similar to matrix or tensor interactions. Then, both from a perturbative (Hopf algebraic) and non-perturbative (FRG) perspective there are indications that renormalization is inconsistent with a single wave function renormalization parameter, even when the propagator is the same as in local QFT. We show how to improve this in terms of several wave function renormalizations and how, consequently, the renormalization group is modified. This is based on arXiv:2305.06136 and ongoing work.