MP 13: Quantenfeldtheorie 2

Zeit: Donnerstag 17:30–18:30 Raum: M010

MP 13.1 Do 17:30 M010

Spectral theory of translation automorphisms in QFT — •Wojciech Dybalski — University of Göttingen, Germany

The decomposition of the spectral measure of a Hamiltonian into its pure point, absolutely continuous and singular continuous parts is crucial for the formulation and resolution of the problem of asymptotic completeness in quantum mechanics. Therefore, a deeper understanding of particle aspects in quantum field theory requires the development of a similar, detailed spectral theory of translation automorphisms. Such a theory is presented in this talk and illustrated by several examples. Its applications to the problem of particle interpretation in QFT are discussed.

MP 13.2 Do 17:50 M010

Pole structure of higher correlation functions in 4D globally conformal invariant quantum field theory — •Marcel Bischoff — Institute of Theoretical Physics, Göttingen, Germany

Assuming global conformal invariance of Wightman functions has far reaching implications, e.g. such functions are rational. The twist two contribution of the operator product expansion of a pair of scalar fields of equal scaling dimension in 4 space-time dimension gives rise to a bi-field which is harmonic in both arguments. That in turn strongly restrains the admissible pole structures. We characterize possible pole structures which cannot be realized by free field constructions.

MP 13.3 Do 18:10 M010

Analysis of the twist two part of conformally invariant correlation functions — •Ingo Wagner — Institut für Theoretische Physik, Göttingen, Deutschland

We study correlation functions within the setting of globally conformal invariant quantum field theories in four dimensional spacetime. The correlation functions can be expanded in terms of partial waves that are labeled by two quantum numbers called twist and spin. From this one can obtain information about the field content of conformal theories. We will focus on the twist two part of these expansions for the four point and six point correlation functions, where the partial waves are solutions of a system of three partial differential equations.