MP 11: Quantenfeldtheorie II

Time: Wednesday 15:45–16:45   Location: HFT-FT 101

MP 11.1 Wed 15:45 HFT-FT 101

DHR categories and reconstruction of local nets — •Luca
Giorgetti — Institut für Theoretische Physik, Universität Göttingen, Friedrich-Hund-Platz 1, 37077 Göttingen, Germany

Rational chiral conformal field theories are described by local nets of algebras on the line in the axiomatic language of AQFT. Their representation theory (superselection sectors) can as well be translated into algebra by means of the corresponding category of DHR endomorphisms. These categories all share the structure of abstract braided C* tensor categories and, in this sense, it is known that non isomorphic models can yield equivalent categories. We investigate the problem of making the correspondence 1:1 by adding on top of the DHR category its action on the global algebra of observables, and we show duality relations between local algebras and localized endomorphisms pointing in this direction. We ask if every (modular) braided C* tensor category is realized as DHR category of some (rational) net of algebras.

MP 11.2 Wed 16:05 HFT-FT 101

Wedge-local fields in integrable QFT with bound states —
•Yoh Tanimoto — Graduate School of Mathematical Sciences, The University of Tokyo, Tokyo, Japan

For a class of 1+1-dimensional QFT which have factorizing S-matrices with poles, we construct observables localized in wedge regions. This is a first step towards the full construction of Haag-Kastler nets.

MP 11.3 Wed 16:25 HFT-FT 101

A rigorous approach to $O(N)$-invariant nonlinear sigma-models — •Sabina Alazzawi[1] and Gandalf Lechner[2] —
[1]Technische Universität München, Deutschland — [2]Universität Leipzig, Deutschland

Particular attention has been paid to nonlinear sigma-models in 1+1 dimensions since they serve as a useful laboratory for the study of more realistic theories. Building on recently developed construction methods in the operator-algebraic framework of quantum field theory, a rigorous formulation of $O(N)$-invariant nonlinear sigma-models is presented in this talk. Our approach is based on the factorizing S-matrix of the model and aims at verifying the modular nuclearity condition. By means of the latter the Reeh-Schlieder property and hence the existence of local field operators can be proven under certain conditions. Infinitely many other integrable models can be constructed in the same manner by considering a certain family of initial factorizing S-matrices.