

MP 3: Quantum dynamics

Time: Tuesday 11:00–12:30

Location: MP-H5

Invited Talk MP 3.1 Tue 11:00 MP-H5
Dualities and categorical symmetries in quantum spin chains
 — ●FRANK VERSTRAETE — Ghent University

Categorical symmetries play a central role in the characterization of the entanglement features of quantum spin systems exhibiting topological order in 2+1D or criticality in 1+1D. In this talk, we will discuss those symmetries from the point of view of tensor networks, and demonstrate that matrix product operators realize representations of the corresponding module categories. This on its turn allows for a constructive approach to building dualities for quantum spin chains.

Invited Talk MP 3.2 Tue 11:30 MP-H5
Functional Integral and Stochastic Representations for Bosonic Ensembles — ●MANFRED SALMHOFER — Institut für theoretische Physik, Universität Heidelberg, Philosophenweg 19, 69120 Heidelberg

I discuss rigorously defined coherent-state functional integral representations for the partition function and correlation functions of many-boson systems, both for the canonical and the grand-canonical ensemble,

and the relation of these representations to ensembles of interacting random walks. I will highlight a few essential differences between the canonical and grand-canonical ensemble, outline a simplified proof of equivalence of different functional integral representations in the time-continuum limit, and discuss their use in obtaining convergent expansions for the correlation functions.

Invited Talk MP 3.3 Tue 12:00 MP-H5
Color-Flavor Transformation Revisited — ●MARTIN ZIRNBAUER — Institute for Theoretical Physics, Uni Köln, Germany

The "color-flavor transformation", conceived as a kind of generalized Hubbard-Stratonovich transformation, is a variant of the Wegner-Efetov supersymmetry method for disordered electron systems. Tailored to quantum systems with disorder distributed according to the Haar measure of any compact Lie group of classical type (A, B, C, or D), it has been applied to Dyson's Circular Ensembles, random-link network models, quantum chaotic graphs, disordered Floquet dynamics, and more. We review the method and, in particular, explore its limits of validity and some implications for the theory of Anderson localization-delocalization transitions.