Speaker: **Gabriel Dufour, University of Freiburg**

Title: **Fourier analysis of many-body transition amplitudes and states**

Date: **Tuesday, March 5th, 11 o‘clock (s.t.)**

Place: **Seminar room 915**

Fourier analysis of many-body transition amplitudes and states

The Fourier transform over a finite group is a generalisation of the ordinary discrete Fourier transform which allows to analyse a function's behaviour under a group of non-commuting transformations of its domain. We apply the Fourier transform over the symmetric group to the set of multiparticle transition amplitudes arising from the permutations of identical particles. For indistinguishable particles, these amplitudes add up coherently, giving rise to many-particle interference. The Fourier transform provides an analysis of the counting statistics at the output of multiparticle and multimode interferometers in terms of contributions from irreducible symmetry types. We apply this formalism to the interference of partially distinguishable bosons or fermions, whose states can likewise be submitted to a Fourier analysis, and to the determination of suppressed transitions for states of a given symmetry type.