

**Speaker:** Peter Foerderer, University of Freiburg

**Title:** Scattering, interference, and quantum chaos in the anyon-Hubbard model

**Date:** Friday, November 7th, 11:00 am (s.t.).

**Place:** Seminar room 915

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In addition to bosons and fermions, one- or two-dimensional systems can host anyons with non-trivial exchange phase. Here, we consider a Hubbard-type model for one dimensional anyons, consisting in a discrete lattice on which anyons can tunnel and interact.

We first address the case of two anyons on an infinite lattice and demonstrate the existence of scattering resonances related to the anyonic exchange phase. These affect the scattering dynamics of two wavepackets, which experience a Wigner time delay and a lateral shift in the center-of-mass direction.

Moreover, we examine many-anyon systems

from the perspective of quantum chaos. Comparing the eigenvalue statistics and the localization properties of eigenstates with random matrix predictions, we identify the non-interacting limit of the anyon-Hubbard model as chaotic, in sharp contrast to the bosonic case, which we attribute to the effective interaction mediated by the exchange phase.