

Speaker: Fabian Rohrbach, University of Freiburg
Title: Two-body interference of interacting photoelectrons
Date: Friday, May 22, 10:00 am (s.t.).
Place: Seminar room 915

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In the interference of many identical particles, the coherent addition of multiple probability amplitudes strongly depends on the particles' bosonic or fermionic nature. The interference of multiple fermions is usually investigated via controlled tunneling dynamics of ultracold atoms, or the scattering of electrons, which, however, interact with each other through Coulomb interactions, due to their charge. Photoelectrons, emitted through the interaction of light and matter, provide a well controllable source of electrons for interference experiments. However, for multiple independently emitted photoelectrons, it is unclear how the interplay between interference (due to the electrons' exchange antisymmetry) and interactions manifests in their joint detection. Here, we resolve this question. We study the correlations of two indistinguishable photoelectrons, initially spatially separated in a symmetric configuration, arising from two-body interference as well as anticorrelations due to mutual Coulomb repulsion, and show how they can be discriminated.