

Speaker: Raphael Wiedenmann, University of Freiburg
Title: Semiclassical Reconstruction of Many-Body Interference in a Beam Splitter
Date: Friday, December 19, 11:00 am (s.t.).
Place: Seminar room 915

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The beam splitter is a key optical element for observing quantum many-body interference, most famously in the experiment of Hong, Ou and Mandel. In this talk, we explore to what extent such many-body interference effects can be captured by a semiclassical treatment. To this end, we employ the non-interacting Bose-Hubbard dimer as a dynamical analog of the beam splitter, providing the dynamical description of the time-independent scattering process. Within the semiclassical framework, quantum interference is approximated by the interference of two waves associated with the two classical solutions of the system. We identify the conditions under which the correspondence between quantum many-body dynamics and the semiclassical picture holds, and how this correspondence breaks down as quantum granularity becomes significant.