IST AUSTRIA
Institute of Science and Technology

Mathematics and CS Seminar

Derivation of the Maxwell-Schrödinger Equations from the Pauli-Fierz Hamiltonian

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Host: Robert Seiringer

The spinless Pauli-Fierz Hamiltonian describes a quantum system of nonrelativistic identical particles coupled to the quantized electromagnetic field. In this talk, I will discuss its time evolution in a mean-field limit where the number N of charged particles gets large, while the coupling to the radiation field is rescaled by . At time zero it is assumed that almost all charged particles are in the same one-body state (a Bose-Einstein condensate) and that the photons are close to a coherent state. At later times and in the limit it can be proven that the charged particles remain in a Bose-Einstein condensate and that the time evolution is approximately described by the Maxwell-Schroedinger system. This system of equations models the coupling of a non-relativistic particle to the classical electromagnetic field. I will introduce the mentioned models and explain the structure of the proof. The talk is based on work in collaboration with Peter Pickl.

Thursday, February 23, 2017 04:00pm - 06:00pm

IST Austria Campus Seminar room Big Ground floor / Office Bldg West (I21.EG.101)

This invitation is valid as a ticket for the IST Shuttle from and to Heiligenstadt Station. Please find a schedule of the IST Shuttle on our webpage: https://ist.ac.at/en/campus/how-to-get-here/ The IST Shuttle bus is marked IST Shuttle (#142) and has the Institute Logo printed on the side.