Seminar/Talk

Mean-field Dynamics for the Nelson model with Fermions

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Host: Robert Seiringer

The Nelson model (with ultraviolet cutoff) describes a quantum system of non-relativistic identical particles coupled to a quantized scalar field. In this talk, I would like to discuss its time evolution in a mean-field limit of many fermions which is coupled to a semiclassical limit. At time zero, we assume that the gauge bosons of the radiation field are in a coherent state and that the state of the fermions is given by a Slater determinant, whose reduced one-particle density matrix is an orthogonal projection with semiclassical structure. I will motivate that at later times and in the limit of many fermions it can be proven that the fermion state remains close to a slater determinant and that the time evolution is approximately described by the fermionic Schrödinger-Klein-Gordon equations. I will introduce the mentioned models and discuss the status and the structure of the proof. The talk reports about work in progress with Sören Petrat.

Thursday, February 1, 2018 04:00pm - 06:00pm
Big Seminar room Ground floor / Office Bldg West (I21.EG.101)

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