The Journal Club of Condensed Matter Physics

Physikalisches Institut
Raum 3.014

This Week:

Speaker:
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Methods for Slave-Particles in Non-Equilibrium

Abstract: The generall description of non-equilibrium system in a QFT framework has been known for quite some time now [Keldysh 64, Schwinger 61, Feynman Vernon 63] but its application were rather limited due to computational cost and experimental relevance. In the last few decades interest was sparked again due to experimental advances in open and driven quantum system. We will give here an introduction to the framework of the Schwinger-Keldysh formalism in an Green function approach.

We focus on bosonic systems, which may show spontaneously broken symmetry requiring anself consistent approximation scheme. To this end we will introduce the 2-PI effective action [Cornwall, Jackiw, Tomboulis 74] [Berges 05]. As an example system we consider dye-molecules coupled to cavity photons using a slave-particle method, which has been used as impurity solver in heavy fermion systems for quite some time now [Coleman 84]. We show how their concept can be extended to a wide range of physical systems and implemented in an non-equilibrium framework.

Web: https://sagnikiiser.github.io/CondMat-Bonn

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