



TECHNISCHE
UNIVERSITÄT
WIEN

INSTITUT FÜR FESTKÖRPERPHYSIK
Institute of Solid State Physics

Wiedner Hauptstr. 8-10/138, 1040 Wien
www.ifp.tuwien.ac.at

EINLADUNG zum GRUPPENSEMINAR

Recent progress in quantum Monte Carlo simulations for fermions

Fakher Assaad

Department of Theoretical and Astrophysics
University of Würzburg, Germany

Host: Karsten Held
Termin: **Mittwoch, 15 Juni 2016, 11:30 Uhr**
Ort: Institut für Festkörperphysik, TU Wien
Wiedner Hauptstraße 8-10, 1040 Wien
Seminarraum FH gelb 09 (gelber Bereich, 9. OG)
Förderer: ERC-StG-306447 AbinitioDFA

We have recently witnessed tremendous progress in the domain of fermion Monte Carlo. In particular, there is an ever growing class of phenomena one can study without having to confront the infamous negative sign problem. In this talk, I will provide an overview of this progress and then concentrate on a model of fermions coupled to a transverse Ising field. This model, has a very rich phase diagram encompassing topologically ordered phases (Z₂ Dirac spin liquid), a variety of phases characterized by a local order parameter and exotic phase transitions.