



# EINLADUNG zum IFP-SEMINAR

**Jastrow Correlations, Feynman Diagrams, and Density Functionals**  
**A generic approach to the Many-Body problem**

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Host: Karsten Held  
Termin: **Freitag, 22 Jänner 2016, 11 Uhr**  
Ort: Institut für Festkörperphysik, TU Wien  
Wiedner Hauptstraße 8-10, 1040 Wien  
FH Hörsaal 2 (gelber Bereich, 2. OG)  
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In the first part of this talk, we review at an introductory level the development of the method of correlated wave functions for interacting many-body systems. Demanding minimal standards, i.e. the robustness of the theory against the choice of the interactions and the correct stability limits, it is shown that the summation of the so-called parquet-diagrams is a minimal standard. This summation has first been achieved, in a local approximation, by the optimized Jastrow-Feenberg method. Two other derivations that do not use correlated wave functions and lead to exactly the same equations. The minimal implementation of the method leads to quantitative predictions for the energetics and structure of quantum fluids up to densities of about 25 percent of the saturation density of liquid helium.

We then proceed to modern developments that deal with time-dependent correlations to understand the dynamics of strongly interacting systems. We can identify the mechanisms of all clearly observable features of recent neutron scattering experiments.