THEORIEKOLLOQUIUM

Montag, den 08.07.19 um **15:00** in **MG 367**

Prof. Dr. Steven Tomsovic

Washington State University

Post-Ehrenfest many-body quantum interferences in ultracold atoms

Far out-of-equilibrium many-body quantum dynamics in isolated systems necessarily generate interferences beyond an Ehrenfest time scale, where quantum and classical expectation values diverge. Ultracold atomic gases provide a promising setting to explore these phenomena. Theoretically speaking, the heavily-relied-upon truncated Wigner approximation leaves out these interferences. We develop a semiclassical theory of coherent state propagation for many-body bosonic systems, which properly incorporates such missing quantum effects. For mesoscopically populated Bose-Hubbard systems, it is shown that this theory captures post-Ehrenfest quantum interference phenomena very accurately, and contains relevant phase information to perform many-body spectroscopy with high precision. The search for complex saddle trajectories and constructive interference effects of discrete symmetries will be discussed.

Kontakt: Prof. Dr. Jürgen König, koenig@thp.uni-due.de