

Theoriekolloquium

Am **20. Oktober 2022** um **14.15 Uhr** im Raum **W2 1-143** hält

Herr Dr. Francesco Intravaia (HU Berlin)

einen Vortrag mit dem Titel

Quantum Fluctuations at the Interface between Photons, Atoms and Solids

Quantum fluctuations are one of the most unexpected and to some extent still controversial predictions of quantum mechanics. The existence of these irreducible fluctuations is connected, however, with the occurring of many phenomena relevant for several fields of physics, ranging from atomic physics and optics, through multidisciplinary topics such as biophysics, all the way to cosmology. Paradigmatic examples include the appearance of electromagnetic fluctuation-induced phenomena such as the van der Waals & Casimir forces between atoms and/or macroscopic objects and quantum frictional interactions between bodies moving in vacuum at constant relative velocity.

The understanding of these interactions is rapidly becoming very important not only for fundamental purposes but also for the opportunities and challenges that they offer to modern (quantum) technologies. Recent theoretical and experimental investigations of these interactions have in fact opened new perspectives, allowing to investigate interesting aspects of nonequilibrium physics, quantum field theory, atomic and condensed matter physics, and in particular how these research areas merge at the microscopic level.

In this talk I will present some recent results in this field of research. I will focus on electromagnetic fluctuation-induced interactions, discussing the different (analytical and numerical) tools available for their investigation. Particular attention will be devoted to the role that material properties, geometry as well as equilibrium and nonequilibrium physics play in characterizing the behavior of these phenomena.

Interessierte sind herzlich eingeladen.

gez. PD Dr. Svend-Age Biehs