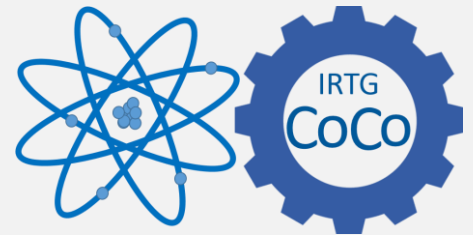


## IRTG-Seminar



# Prof. Dr. Giovanna Morigi

*Saarland University*

## “Quantum crystals of photons and atoms”

We argue that atomic physics offer a test bed for studying the statistical mechanics of long-range interacting systems. We focus in particular on spatial pattern formation of atomic ensembles in optical resonators in the semiclassical regime and discuss the thermodynamic properties of the stationary state as well as the prethermalization dynamics leading to equilibrium. We then discuss quantum phases in the ultracold regime, and show that the interplay between quantum fluctuations and the cavity-induced optical potential lead to novel exotic phases of matter.

**Tuesday, December 6<sup>th</sup>, 2016, 4:00 p.m., HS II, Physics  
High Rise, Hermann-Herder-Str. 3**