

Collective dynamics of atomic ensembles due to long-range optomechanical forcesGIOVANNA MORIGI¹¹*Theoretical Physics, Saarland University, Saarbruecken, Germany***Presentation type: Invited Speaker**

In this talk we will present recent theoretical work on cooling and spontaneous spatio-temporal pattern formation of atomic and molecular ensembles in optical resonators, where the key ingredient of the dynamics are the coherent and dissipative long-range optomechanical forces mediated by multiple scattering of the cavity photons. These dynamics reveal the existence of prethermalized states which are expected to be stable over the experimental time scales even in the bad cavity limit.