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FWF Der Wissenschaftsfonds

# Innsbruck Physics Colloquium

# At the interface between quantum optics and quantum many-body physics


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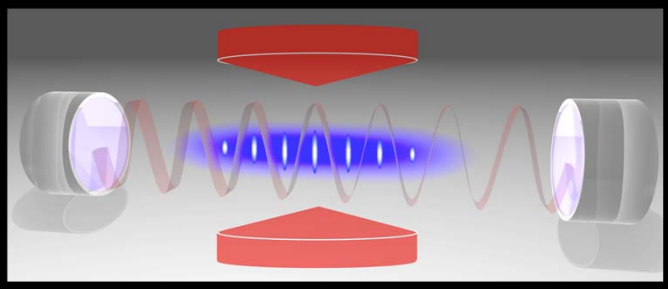
Ultracold atoms interacting with an optical cavity provide a versatile platform to emulate elementary physical scenarios in the laboratory at the interface between quantum optics and quantum many-body physics, where light and matter give rise to a fascinating non-linear interplay. After a tutorial introduction I will discuss a series of remarkable and sometimes useful examples: cavity cooling below the recoil limit, non-destructive in-situ monitoring of Bloch oscillations, matter wave superradiance, non-equilibrium dynamics in the open Dicke model, cavity-induced self-organized Mott-insulator, and dynamical melting of a cavity-induced density wave phase.

**DK-ALM Pre-Talk: 16:30 h**
**David Plankensteiner**
**Cavity antiresonance spectroscopy of dipole coupled subradiant arrays**
Snacks will be provided in between the pre-talk and the colloquium.

## Colloquium: Tuesday, 08.05.2018
## 17:15 h in lecture hall C

Innsbruck Physics Colloquium, Organisation: M. Beyer, R. Kissmann, H.-C. Nägerl, A. Reimer