

## Einladung

zum

**Physikalischen Kolloquium**

**Montag, 08.02.2016**

**16:15 Uhr in N24/H13**



**Professor Dr. Herwig Ott**

Department of Physics

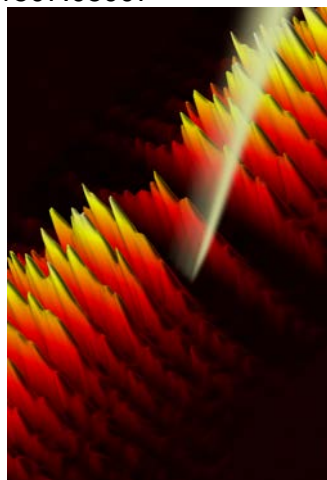
University of Kaiserslautern

### **Driven-dissipative Bose-Einstein condensates**

Ultracold quantum gases are usually well isolated from the environment. This allows for the study of ground state properties and unitary dynamics of many-body quantum systems under almost ideal conditions. Introducing a controlled coupling to the environment “opens” the quantum system and non-unitary dynamics can be investigated. Such an approach provides new opportunities to study fundamental quantum effects in open systems and to engineer robust many-body quantum states. I will present an experimental platform [1,2] that allows for the controlled engineering of dissipation in ultracold quantum gases by means of localized particle losses. This technique is exploited to study quantum Zeno dynamics [3] and non-equilibrium dynamics in an ultracold quantum gas [4]. Recently, we were also able to realize non-equilibrium steady-states in a driven-dissipative Bose-Einstein condensate [5].

### **References**

- [1] T. Gericke et al., Nature Physics **4**, 949 (2008).
- [2] P. Würtz et al., Phys. Rev. Lett. **103**, 080404 (2009).
- [3] G. Barontini et al., Phys. Rev. Lett. **110**, 035302 (2013).
- [4] R. Labouvie et al., Phys Rev. Lett. **115**, 050601 (2015).
- [5] R. Labouvie et al. arXiv:1507.05007



Ab 16.00 Kaffee, Tee und Kekse vor dem Hörsaal H13

**Organisation: Prof. Dr. F. Jelezko, Tel. 23750**

**Host: Prof. Dr. J. Denschlag, Tel. 26100, off.: 26101**