PHYSIK

THEORETISCH PHYSIKALISCHES KOLLOQUIUM

Donnerstag, den 12.01.2017 um 15:30 Uhr in Raum 46-576

Quantum phases and dynamics of long-range Rydberg and dipolar gases

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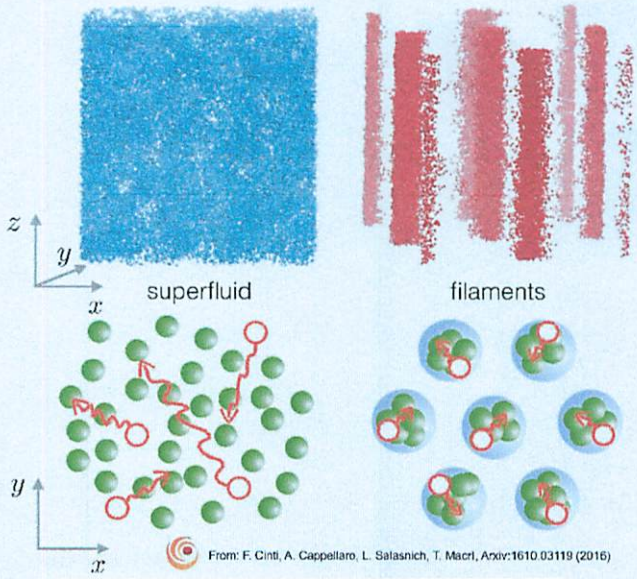
The realization and the control of long-range interactions with atomic systems at very low temperatures opens up a whole new realm of many-body physics that has become a central focus of research. In the first part I will show from a theoretical perspective how non-local Ising interactions in optical lattices can provide an optimal playground for the engineering of exotic crystalline phases that has been recently realized in the lab [1,2]. In the second part I will focus on the quantum phases of dipolar bosons at zero and finite temperature. I will discuss the superfluid properties of such phases investigated via Path Intergral Monte Carlo methods and the possibility of observing them in the laboratory [3].

[1] H. Labuhn, D. Barredo, S. Ravets, S. de Léséleuc, T. Macrì, T. Lahaye, A. Browaeys, *Nature* **534**, 667 (2016)

[2] P. Schauß, J. Zeiher, T. Fukuhara, S. Hild, M. Cheneau, T. Macrì, T. Pohl, I. Bloch, C. Gross, *Science* **347**, 1455 (2015)

[3] F. Cinti, A. Cappellaro, L. Salasnich, T. Macrì, arXiv:1610.03119 (2016)



Gäste sind herzlich willkommen.

Die Dozenten der Theoretischen Physik

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