

SYSN 2 SYSN II

Zeit: Freitag 16:30–18:30

Raum: HU Audimax

Hauptvortrag SYSN 2.1 Fr 16:30 HU Audimax**Bose-Einstein Condensates in fast rotation** — •JEAN DALIBARD — Laboratoire Kastler Brossel, 24 rue Lhomond, 75005 Paris, France

I will discuss some aspects of the physics of fast rotating Bose gases, both from theoretical and experimental perspectives. Using an approach based on the Landau Level structure of the spectrum, I will discuss the vortex pattern as well as the BEC transition temperature. I will also describe recent experiments performed in our laboratory, aiming to create a system of layered rotating superfluids.

Hauptvortrag SYSN 2.2 Fr 17:00 HU Audimax**Matter Wave Soliton Train from a Bose-Einstein Condensate** — •RANDALL G. HULET — Department of Physics and Astronomy, Rice University, P.O. Box 1892, Houston, TX 77251-1892, USA

We have created a train of bright matter wave solitons from a Bose-Einstein condensate of lithium. Up to ten solitons form by modulational instability when the interatomic interactions are tuned from repulsive to attractive. The solitons propagate in a one-dimensional potential formed from a focused laser beam. Adjacent solitons are observed to strongly repel one another due to destructive wave interference.

Hauptvortrag SYSN 2.3 Fr 17:30 HU Audimax**Towards controlling matter wave lattice solitons** — •ANNA SANPERA — Department of Physics, ICREA, Universitat Autònoma de Barcelona

The field of Bose-Einstein Condensation has stimulated a renewed interest in solitonic models, starting from the first experimental demonstration of continuous dark and bright solitons in condensates. The possibility, nowadays, to load the condensate in an optical lattice or to change its scattering length opens the path towards a control of such structures hardly achievable in other areas of physics.

Hauptvortrag SYSN 2.4 Fr 18:00 HU Audimax**Non-spreading wave packets of interacting matter waves: Gap-Solitons and nonlinear self trapping** — •MARKUS OBERTHALER — Kirchhoff Institut für Physik, University of Heidelberg, Im Neuenheimer Feld 227, D-69120 Heidelberg

One of the intriguing properties of nonlinear wave dynamics is the existence of stationary localized wave packets. In this talk the nonlinear wave dynamics of interacting matter waves realized with a Bose-Einstein condensate in one-dimensional periodic potentials will be discussed. In the case of weak periodic potentials Gap-solitons i.e. bright solitons for repulsive interaction, have been experimentally realized. In the deep periodic potential limit a totally different localization mechanism leads (discrete system) to non-spreading wave packets * nonlinear self trapping, which recently has been experimentally confirmed.