SFB/TRR 21 - Seminar

27. Juni 2011, Stuttgart

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Two experiments in the dynamics of ultracold rubidium-87: a tunable double well and artificial gauge fields

I will discuss two recent experiments studying the dynamics of ultracold rubidium-87 BECs. The first experiment, performed on the "Chip Experimentäpparatus in Toronto explores the crossover between hydrodynamics and Josephson transport in a tunable RF-dressed double well potential. Though the crossover between regimes occurs quantitatively at the expected barrier height – when it is equal to the chemical potential – we see qualitatively Josephson-like behaviour when there remains a classical link between the wells. The second experiment, performed on the "Rubidium-IIäpparatus at JQI-NIST, studies the transport properties of an irrotational BEC in the presence of a synthetic magnetic field. This experiment demonstrates the Hall signal for a gas of ultracold atoms and establishes a new measurement tool for these systems.

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