SEBASTIAN KRAFT, 'Single Atom Detection in Microtraps: Towards Micro-Atomics'

DR. SEBASTIAN KRAFT

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Seminar, January 30, 15:00h. Conference Room

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The versatile trapping geometries of microchips combined with the concepts of atom optics promise a wide range of new applications from precision sensors to quantum information technology. Recent experiments demonstrated coherent manipulation of Bose-Einstein condensates in microtraps such as phase coherent splitting in a double well potential or diffraction from a magnetic lattice. These experiments have to face the interactions between

the atoms which have a significant impact on the measurement and can even lead to decoherence. To proceed further it becomes more and more important to work with extreme dilute gases or even single atoms. I introduce a new integrated single atom detector on a chip. Rb atoms are ionized near the surface of a chip in a three photon process. To gain spatial sensitivity a two photon resonance is used for the first excitation. The excited atoms are then ionised by a high power fiber laser.

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