



## Mariusz Semczuk

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### Atom-molecule dark states in quantum gases of ${}^6\text{Li}$

In this talk I will present a recent demonstration of exotic dark states in quantum gases of fermionic lithium where atom-molecule coherence is produced between a deeply bound singlet (or triplet) molecular level and atomic pairs in a weakly interacting Fermi gas at zero Gauss or in the BEC-BCS crossover regime (i.e. Feshbach molecules or BCS-like pairs). We observe an abrupt and unanticipated change of the classic EIT signature (Electromagnetically Induced Transparency) of the dark-state (i.e. the suppression of single photon absorption to the excited state) in the vicinity of the broad Feshbach resonance at 832.2 G potentially indicating new physics not previously considered. I will also discuss the feasibility of producing a Bose Einstein condensate of lithium dimers in the absolute ground state.

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Universität Ulm, Raum 45.2.101

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