

Abstract Submitted  
for the DAMOP17 Meeting of  
The American Physical Society

**A two-species quantum gas experiment for the preparation of ultracold polar NaK molecules** TORBEN SCHULZE, TORSTEN HARTMANN, KAI VOGES, ALESSANDRO ZENESINI, SILKE OSPELKAUS, Institute of Quantum Optics, University of Hannover — Ultracold mixtures of atomic quantum gases provide the starting point for the preparation of polar ground state molecules, which are excellent candidates for the study of quantum chemistry and exotic dipolar quantum phases. Here, we present an experimental apparatus for the preparation of ultracold Na and K quantum gas mixtures, which are two favorable candidates for a mixture experiment due to the well-known cooling strategies for the individual atoms. We describe our experimental setup including a high resolution objective providing an experimentally verified resolution of 700nm and a versatile electrode configuration for the manipulation and control of molecules in external electric fields. We present our approach towards the preparation of quantum degenerate mixtures, our measurements regarding the up-to-now unknown scattering properties of the boson-boson mixture and our envisioned pathway for the efficient conversion of NaK Feshbach molecules into ground state molecules.

Torben Schulze  
Institute of Quantum Optics, University of Hannover

Date submitted: 27 Jan 2017

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