

Abstract Submitted  
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**Towards a quantum gas of polar YbCs molecules<sup>1</sup>** R. FREYTAG, M. PETERSEN, E.A. HINDS, M. TARBUTT, Imperial College London, K. BUTLER, S. KEMP, S.A. HOPKINS, D.A. BRUE, J.M. HUTSON, S.L. CORNISH, Durham University — The potentials of ultracold polar molecules have been discussed with respect to quantum information processing and quantum simulation. This experiment focuses on the production of quantum degenerate YbCs molecules. We propose to magneto-associate the atoms over a Feshbach resonance and transfer them to the ground state using Stimulated Raman Adiabatic Passage (STIRAP). Ground state YbCs will, due to its single valence electron, exhibit an electric as well as a magnetic dipole moment. It should therefore demonstrate spin dependent interactions in addition to long-range dipole-dipole interactions. Here we outline the theoretical and experimental progress on creating a dual species Magneto-Optical Trap (MOT) of Yb and Cs.

<sup>1</sup>ESPRC

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