

PROBING FUNDAMENTAL PHYSICS WITH COLD AND ULTRACOLD MOLECULES

E.A. HINDS, B.E. SAUER, J.J. HUDSON, M.R. TARBUTT, D.M. KARA, *Centre for Cold Matter,
Imperial College London, SW7 2AZ.*

The search for an electron EDM is a search for new particle physics. We are measuring the electron EDM using a beam of cold YbF. The present version of our experiment has the statistical sensitivity to make a measurement at the level of a few times 10^{-28} e.cm. and this is in progress. Several upgrades now in preparation, will give a further tenfold improvement in sensitivity. I will discuss the present status of this programme and future prospects.

There is now a strong prospect of greatly improving sources of cold molecules towards much higher intensity and also towards much lower temperature. I will describe some of these methods and the new physics that is starting to become accessible as a result.