



17th September 2015 - 10:00 h
CFEL – Building 99, seminar room I+II (ground floor)

Vijay Singh

Department of Physics, Imperial College London, UK

Department of Physics, Durham University, UK

Cold molecules for controlled chemistry and quantum simulations

Using laser ablation and cryogenic helium buffer gas cooling, we generate dense samples of cold atomic Li and molecular CaH. These cold samples are used for investigations of electronic spin control of chemical reactions Li and CaH at 1 K. Our progress towards electronic spin control and measurements of Li and CaH chemical reactions at 1 K will be presented.

On the other hand, for quantum simulations, we are designing a traveling wave Zeeman decelerator. The decelerator will be used for decelerating supersonic beams of paramagnetic molecules down to standstill. The molecules will then be cooled down to 100 μ K temperatures by sympathetic cooling with laser cooled atoms. Finally, they will be stored in an optical lattice for quantum simulations. Our progress towards achieving these goals will be presented.