

8. Cold gases in optical lattices.....3 lectures (1hr 30m each)

Speaker: Prof. W. D. Phillips

(a) Theory and Experiment

Atom light interactions in the context of optical traps

The optical lattice potential

Loading atoms into the optical lattice potential

Measuring the momentum of atoms in a lattice

Bloch functions and motion of atoms in a lattice

Manipulating atoms with an optical lattice

Bloch oscillations and Bloch acceleration

Superfluidity – Mott insulator transitions

Theoretical and experimental consequences of Bose gases in lower dimensions

Quantum information processing in optical lattices

Prospects for atoms in optical lattice potentials