

SAIP 2011



Contribution ID : 74

Development of a laser cooling and magneto-optical trapping experiment for Rubidium 87 atoms

Thursday 14 Jul 2011 at 17:00 (02h00')

Content :

A magneto optical trap (MOT) is capable of trapping a vapor cloud consisting of atoms cooled down to the micro Kelvin range. Three orthogonal pairs of counter-propagating laser beams of the correct circular polarisation form an optical molasses which facilitates the cooling of neutral atoms. Additionally a spatially non-uniform magnetic field produced by two current carrying coils in a Maxwell gradient configuration is used to trap the cooled atoms. In this poster the effects of the trap parameters, including the laser beam intensity and frequency detuning, beam diameter and magnetic field gradient, on the number of trapped atoms are discussed. The nature of the beam polarisation and its importance in the context of the experiment is measured and discussed. The current status of our development of an experimental setup for laser cooling and trapping of ^{87}Rb atoms in vacuum with the aid of a MOT is presented.

Level (Hons, MSc, PhD, other)? :

PhD

Consider for a student award (Yes / No)? :

Yes

Short Paper :

No

Primary authors : Mr. RIGBY, Charles (Laser Research Institute, Stellenbosch University)

Co-authors : Dr. STEENKAMP, Christine (Laser Research Institute, Stellenbosch University) ;
Prof. ROHWER, Erich (Laser Research Institute, Stellenbosch University)

Presenter : Mr. RIGBY, Charles (Laser Research Institute, Stellenbosch University)

Session classification : Poster2

Track classification : Track C - Lasers, Optics and Spectroscopy

Type : Poster Presentation