

Lecture summary

- Magneto-Optical Trap
 - Loading a MOT from a Zeeman slower
 - Loading a MOT from a vapor
- Light shift
- Sisyphus cooling
- Optical dipole trap (ODT)
- Evaporative cooling
- Magnetic field trap
- Sr lattice clock
 - Magic wavelength

Homework

1. Textbook exercise (9.10) Zeeman slowing in a magneto-optical trap.
2. Textbook exercise (9.11) The equilibrium number of atoms in a MOT.
3. Textbook exercise (9.15) Dipole-force trap.
4. Textbook exercise (9.16) An optical lattice.
5. Textbook exercise (10.3) Magnetic trapping.
6. Textbook exercise (10.4) Evaporative cooling.

Reading Assignments:

- Steve Chu, Rev. Mod. Phys. 70, 685 (1998).
Nobel Lecture: The manipulation of neutral particles
- Quantum state engineering and precision metrology using state-insensitive light traps. J. Ye, H.J. Kimble, H. Katori, Science 320, 1734-1738 (2008).