

Technical Note No. 25

Magneto Optical Trap (MOT) I

Magneto Optical Traps are a suitable setup for optical cooling and trapping of neutral atoms. There are different setups referred in literature. This technical note refers to simple MOT scheme which already allows moderate trapping efficiencies.

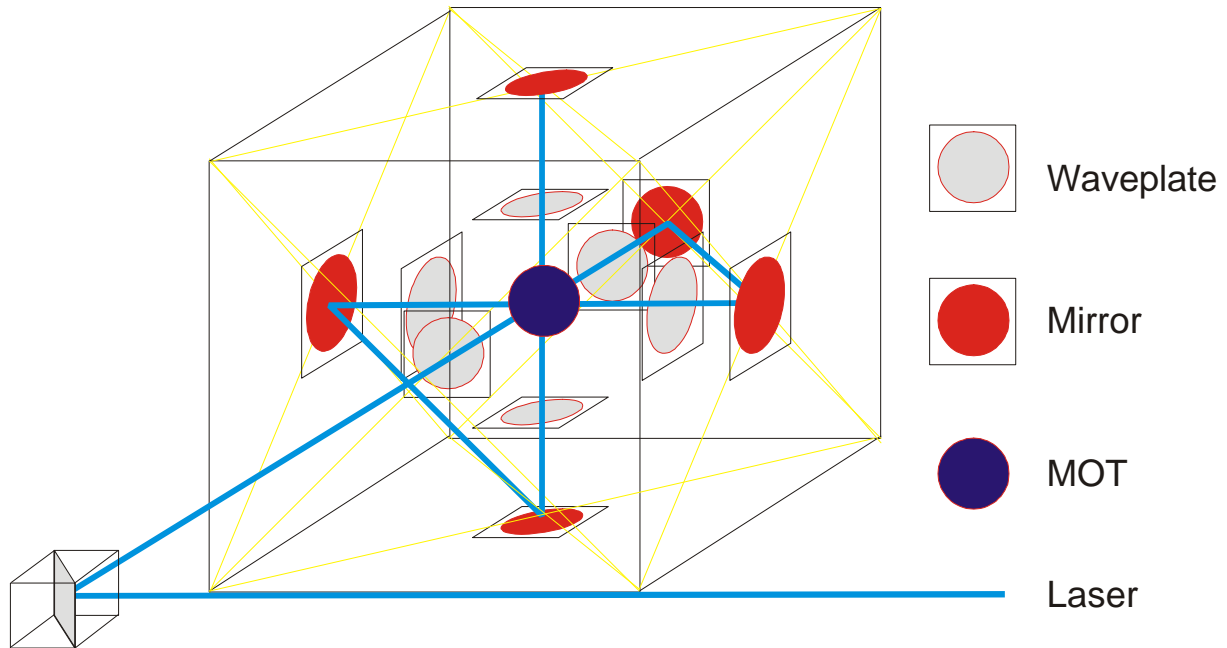


Fig. 1: Schematic Setup and Beam Path of a Magneto Optical Trap I

The laser frequency is stabilized via a Rb Cell and a Lockbox which is not shown in this schematics. The laser beam is drawn turquoise in Fig. 1. It is directed into the Magneto Optical Trap via a polarizing beam splitter. A wave plate changes the polarization of the laser beam from linear to circular polarized before entering the MOT cell. Via two mirrors, the laser beam is directed into the next space direction. In total the laser beam passes the MOT cell three times before it reaches a 0 degree HR mirror. The HR mirror inverts the laser beam.

This setup is easy to align and results already in a moderate trapping efficiency. We recommend this setup for students who are looking for fast results. For a more detailed description, please compare C. Wieman, G. Flowers, Inexpensive laser cooling and trapping experiment for undergraduate laboratories, Am. J. Phys. 63, 317, 1995.

For high trapping efficiencies, we recommend our MOT II setup which results in higher trapping efficiencies, c/f <http://data.sacher-laser.com/techdocs/MOTv2.pdf> For further information, please contact us.

Document: <http://data.sacher-laser.com/techdocs/MOTv1.pdf>
 Note: Specification are subject to change without further notice

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