A surface magneto optical trap

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Recently, experiments with microstuctured atomic traps have gained a lot of interest. In particular, the realization of Bose-Einstein condensates, in such magnetic microtraps [1, 2] has opened the way for many exciting experiments.
The basic principle of these microtraps is the superposition of the magnetic field generated by a wire structure with an external homogenous magnetic field. For an appropriately shaped wire the two fields together can form a magnetic quadrupole as well as other trapping potentials. In these traps large gradients and curvatures of the magnetic field are possible and trapping frequencies of several kHz can be achieved with currents in the wires on the order of 1 A. Therefore BEC can be reached within evaporation times of less than one second [2].
In our group, such a microtrap experiment for ^{87}Rb is currently being built up. For this purpose, a new vacuum chamber with good optical access as well as a diode laser system was set up. The Rubidium source in the chamber is a Rubidium dispenser, which acts as a thermal source for Rb Atoms. In a first experiment, we have realized a ^{87}Rb Magneto Optical Trap (MOT) near a gold surface in our vacuum chamber. To operate the MOT close to the surface, 4 of the MOT beams are reflected from the gold surface [3].
On this poster an overview of the different parts of the experimental setup is given, and first experimental data are shown.

[1] H. Ott et al., *Phys. Rev. Lett.* **87** 230401 (2001).
[2] W. Hänsel et al., *Nature* **413**, 498 (2001).
[3] D. Schneble, Diploma Thesis, Universität Konstanz (1997).