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A lattice of permanent magnetic microtraps for ultracold atoms MANDIP SINGH, ALEXANDER AKULSHIN, ANDREI SIDOROV, RUSSELL MCLEAN, PETER HANNAFORD, Swinburne University of Technology — We report on the loading and trapping of ultracold ^{87}Rb atoms in a one dimensional permanent magnetic lattice [1] of period 10 μm produced on an atom chip. The grooved structure which generates the magnetic lattice potential is fabricated on a silicon substrate and coated with a perpendicularly magnetized multilayered TbGdFeCo/Cr film of effective thickness 960 nm. Under our experimental conditions up to 2×10^6atoms are trapped at a distance of less than 5 μm from the surface with a measured lifetime of about 450 ms and at trap frequencies up to 90 kHz. These results are important in the context of studies of quantum coherence of neutral atoms in periodic magnetic potentials on an atom chip. In addition, we report on experimental results demonstrating the reflection dynamics of a Bose Einstein condensate and ultracold atoms in the lattice potential. **References:** [1] M. Singh, *et al.,* arXiv: 0801.0624 [physics-atom-ph].

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