Loading a Far-Off Resonance Trap from a $^{87}$Rb MOT

BIN JIAN, WILLIAM VAN WIJNGAARDEN, York University — Loading a far-off resonance trap (FORT) directly from a $^{87}$Rb MOT has been demonstrated. The FORT is formed by focusing a high power (20 watts) 1064 nm infrared laser into a beam waist with a diameter of 50 $\mu$m. The trap depth is about 1.4 mK that is deep enough to trap the atoms collected by a MOT. The atom number of the MOT is about $5 \times 10^7$ with a density about $10^{10}$ atoms/cm$^3$. The temperature of the MOT atom cloud is $100 \sim 200$ $\mu$K during the FORT loading phase. Optimizing the FORT loading is on the way.

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