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Achieving and Analyzing the Cold Atoms in a dilute Atomic Gas

JINA PARK, DAHYUN YUM, WONHO JHE, Department of Physics and Astronomy, Seoul National University — We investigate a quantum statistical phenomenon of Bose-condensed gas of alkali atoms in a magnetic trap. In double MOT system, Rubidium 87 atoms are captured at a gathering chamber and then transferred to a glass chamber. Trapped atomic clouds are cooled and loaded into a time-averaged orbiting potential applied by the superposition of a big spherical quadrupole field using anti-helmholtz coil and a small rotating bias field at 7kHz. In each step, we check the temperature and the density obtained by time of flight (TOF) distribution of trapped atoms. Through this process, we optimize our system including a trap design or experimental time sequence. In this presentation, we will describe how to improve our setup and show some progress. Future experiments related with the dynamical properties of cold atoms in the magnetic trap will be also proposed.

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