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Realizationof large^{7}LiBose-Einstein condensates using gray molasses KYUNGTAE KIM, SEUNGJUNG HUH, KIRYANG KWON , JAE-YOON CHOI, Department of Physics, Korea Advanced Insitute of Science and Technology, Daejeon 34141, Korea, LI-7 TEAM TEAM — The ultracold ^{7}Li atoms are a good candidate for studying non-equilibrium phenomena by means of relatively light mass and the broad Feshbach resonance. In this poster, we report an apparatus that produces Bose-Einstein condensates with 2.7×10^6 atoms in 11s. To have rapid evaporation cooling in a magnetic trap, we adopt D_1 gray molasses [1] that cools atoms trapped in a magneto-optical trap to 25μK. Run-away evaporation cooling is achieved in a plugged quadrupole magnetic trap, where the Majorana atom loss is fully suppressed by a repulsive optical barrier. The BECs are obtained in a crossed-optical dipole potential by evaporation near the Feshbach resonance. For efficient evaporation, we apply a vertical field gradient, tilting the optical potential to reduce potential depth [2].

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Kyungtae Kim
KAIST

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