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All optical production of a large BEC of ^{87}Rb in two compressible crossed dipole force traps KAZUYA YAMASHITA, KOUHEI HANASAKI, AKIHIRO ANDO, HIROSHI KANEMITSU, RYOSUKE GOTO, TOSHIYA KINOSHITA, Graduate School of Human and Environmental Studies, Kyoto University — We describe our all optical method to make BEC of ^{87}Rb . By adiabatically releasing a dense cold atomic gas from 3D FORLs, 2×10^7 atoms are loaded into different two crossed dipole force traps (CDTs), created by 8W multi-mode fiber laser and 1.6W single mode fiber laser, respectively. Both CDTs are simultaneously compressed, but the trap size of the single mode laser is much smaller than the other. After the compression, first we decrease only the multi-mode laser power gradually and shut it off. The evaporation is continued in the tight CDT by the single mode laser. An almost pure BEC of 1×10^6 atoms is created in totally ~ 3.3 s evaporations. We could minimize heating due to Raman process which is often pointed out when using high power multi-mode fiber lasers.

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