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Bose-Einstein condensation of an alkaline earth element: ^{40}Ca

We have achieved Bose-Einstein condensation of ^{40}Ca , the first for an alkaline earth element. The influence of elastic and inelastic collisions associated with the large ground state s-wave scattering length of ^{40}Ca was measured. From these findings, an optimized loading and cooling scheme was developed that allowed us to condense about 2×10^4 atoms after laser cooling in a two-stage magneto-optical trap and subsequent forced evaporation in a crossed dipole trap within less than 3 s. The condensation of an alkaline earth element opens novel opportunities for precision measurements on the narrow intercombination lines as well as investigations of molecular states at the $^1\text{S} - ^3\text{P}$ asymptotes.

