Study for Big Bang nucleosynthesis concerning lithium isotopes


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One of the most important success for the theory of nucleosynthesis is the precise reproduction of the mass abundance ration for helium-4 as 25% during the Big Bang. This achievement can be one of the three proves of the existence of the Big Bang. For the comparisons between the theory and the observations, abundances of deuteron and helium-3 are also consistent. However, there is a quite large inconsistency for lithium-7 where the theoretical result is three times higher than the observations, which are reported by Sipte[1] and Asplund[2]. In order to solve this hard inconsistency we may refine data base of the nuclear reaction information around the \(^7\)Li. Despite the many previous efforts there could still be a region where the experimental information is not sufficient between 0.1 and 0.4 MeV of the c.m. energy[3,4]. Consequently, we have started the experimental study with measuring the astrophysical s-factor for the destruction of \(^7\)Li.