

Abstract Submitted
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Cosmological Solutions to the Big-Bang Lithium Problem TOSHITAKA KAJINO, Natl Astronomical Observ, Univ of Toyo — The ${}^7\text{Li}$ abundance calculated in BBN with the baryon-to-photon ratio fixed from fits to the CMB power spectrum is inconsistent with the observed lithium abundances in metal-poor halo stars. Previous cosmological solutions proposed to resolve the problem include photon cooling (possibly via the Bose-Einstein condensation of a scalar particle), or the decay of a relic X-particle (possibly the next-to-lightest SUSY particle). In this talk we reanalyze these solutions both separately and in concert by taking account of a primordial magnetic field (PMF) that suggests many observable signatures in the CMB anisotropies. Especially, we precisely study the effects of atomic excitation of exotic X-nuclei and also its mass dependence on the BBN, and finally deduce the updated constraints on the initial abundance and lifetime of the X-particle in the context of revised upper limits to the primordial ${}^6\text{Li}$ abundance. We also suggest a new important reaction path to ${}^9\text{Be}$ production.

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