

Abstract Submitted
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Studies in the Big Bang Nucleosynthesis of Lithium Isotopes¹

GRANT MATHEWS, UND, TOSHITAKA KAJINO, NAOJ, MOTOHIKO KUSAKABE, Tokyo U. — There has been a lingering puzzle in that the ${}^6\text{Li}$ abundance observed in metal poor halo stars appears to exhibit a plateau as a function of metallicity similar to that for ${}^7\text{Li}$. This suggests a possible big bang origin for ${}^6\text{Li}$. However, because the radiative capture of a deuteron by and alpha particle during the big bang is suppressed, it is difficult to explain this observed ${}^6\text{Li}$ abundance. At the same time the observed ${}^7\text{Li}$ abundance is below that expected from BBN. In this talk we summarize a variety of approaches by which we have attempted to explain this observation. Among the possibilities are uncertainties in the stellar astrophysics of lithium isotope detection, galactic chemical evolution, effects from a massive charged or uncharged unstable relic supersymmetric particle present during BBN, or a time variation of fundamental constants. We show that it is possible, but difficult, to obtain a simultaneous solution to both the problems of underproduction of ${}^6\text{Li}$ and overproduction of ${}^7\text{Li}$ in a single paradigm.

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