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Investigating the Synthesis of the Primordial Lithium Isotopes

CHRISTEL SMITH, Department of Physics, Arizona State University, GEORGE FULLER, Department of Physics, University of California, San Diego, RICHARD BOYD, Lawrence Livermore National Laboratory, CARL BRUNE, Department of Physics and Astronomy, Ohio University — The discrepancy between the primordial ${}^7\text{Li}$ predicted abundance and the observed abundance in metal poor halo stars has been a longstanding problem. This problem may in fact be coupled with recent observational suggestions that there could be 2-3 orders of magnitude more ${}^6\text{Li}$ than Big Bang Nucleosynthesis (BBN) calculations predict. We explore these issues by developing a more comprehensive nuclear reaction network. Some of the nuclear reactions incorporated have not previously been included in BBN calculations and few are well measured in the laboratory. We also discuss the effect of lepton captures on nuclei in BBN and present some calculations.

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