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### **A Bitter Pill: The Cosmic Lithium Problem<sup>1</sup>**

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Primordial nucleosynthesis describes the production of the lightest nuclides in the first three minutes of cosmic time. We will discuss the transformative influence of the *WMAP* and *Planck* determinations of the cosmic baryon density. Coupled with nucleosynthesis theory, these measurements make tight predictions for the primordial light element abundances: deuterium observations agree spectacularly with these predictions, helium observations are in good agreement, but lithium observations (in ancient halo stars) are significantly discrepant—this is the “lithium problem.” Over the past decade, the lithium discrepancy has become more severe, and very recently the solution space has shrunk. A solution due to new nuclear resonances has now been essentially ruled out experimentally. Stellar evolution solutions remain viable but must be finely tuned. Observational systematics are now being probed by qualitatively new methods of lithium observation. Finally, new physics solutions are now strongly constrained by the combination of the precision baryon determination by *Planck*, and the need to match the D/H abundances now measured to unprecedented precision at high redshift.

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