

CEMP Stars as Probes of First-Star Nucleosynthesis and Galaxy Assembly

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Over the course of the past few decades, it has become clear that the class of metal-poor stars known as carbon-enhanced metal-poor (CEMP) stars are powerful probes of a number of areas of interest to contemporary astrophysics. In this contribution, I review the multiple lines of evidence that demonstrate the association of CEMP-no stars (which do not exhibit neutron-capture element enhancements) with the nucleosynthesis products of the very first stars, their likely birth place in low-mass mini-halos, and (once accreted by the halo) their role as tracers of the outer-halo population of the Galaxy. The CEMP-*s* stars (which exhibit enhancements of the heavy *s*-process elements), by contrast, are likely to have been born in more massive mini-halos, and serve as tracers of the inner-halo population. The well-known increasing frequency of CEMP-no stars (and newly recognized relative constancy of CEMP-*s* stars) with declining metallicity, and the identification of the primary groups in the Yoon-Beers diagram of $A(\text{C})$ vs. $[\text{Fe}/\text{H}]$, provide the means to explore these associations in more detail, and to constrain numerical models of the formation of the Milky Way.

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Talk/Poster

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