

CEMP Stars as Probes of First-Star Nucleosynthesis, the IMF, and Galactic Assembly



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Seeking the origin of CEMP-r/s stars

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The elemental abundances in many metal-poor stars show enhancements of carbon and as well neutron-capture elements: CEMP-s, CEMP-r and CEMP-r/s stars. In several radial velocity (RV) projects we have tried to uncover the origin of CEMP stars with enhancements of s- and/or r-process elements. The orbital elements of those that are binaries seem to give hints about the origin of the enhancements. Radial-velocity monitoring of CEMP-s stars has shown that these are primarily found in binary systems, and gained their s-process abundances via mass transfer as their companion evolved through the asymptotic giant branch phase. The source of neutron-capture elements of the CEMP-r/s stars is not well constrained. We now monitor a sample of CEMP-r/s stars for radial-velocity variations to determine the binary frequency of a sample of CEMP-r/s stars and determine orbital parameters for the binary systems.

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