Astrophysics Seminar

Abundances of n-capture and Iron-peak Elements in Halo Stars

Tuesday

November 1

12:30 P.M.

Rm 184 NSH

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High-resolution spectrographic observations, combined with laboratory atomic physics data, have led to increasingly precise abundance determinations in stars. We have focused on elemental abundances in halo stars. These stars, among the oldest in our Galaxy, were seeded or "polluted"' by the first generation of stars.

We have extensively observed the n(eutron)-capture elements (synthesized in the slow or rapid process) and have recently initiated new studies of the iron-peak elements in the halo stars.

To an observational limit, all of the halo stars show some evidence of n-capture elements. However, the r(apid)-process pattern varies (per star) with a complete r-process in some cases like CS 22892-052 and only a weak or partial r-process pattern in other cases like HD 122563.

Further, we see evidence of extensive n-capture elements in some stars in nearby dwarf galaxies. We find that several of the iron peak elements (Ti, V, Sc and Cr) show correlations. The observed elemental abundance ratios of these iron-peak elements can then be employed to explore the properties of explosive nucleosynthesis in, and to constrain models of, core-collapse supernovae.