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The Mass Distribution of the First Stars revealed by Abundance Pattern Matching of Ultra Metal-Poor Stars

Thursday, 6 December 2018 15:15 (30 minutes)

In this talk, I will present a Monte Carlo approach to finding suitable stellar progenitors for Ultra Metal-Poor (UMP) stars, based on the discovery of new UMP stars in the Galactic Halo. UMP stars are thought to be formed from gas clouds polluted by the very first (Population III) stars to be born after the Big-Bang. These Pop. III stars are thought to be massive and short-lived, ending their lives in explosive events such as supernova type II. By studying the detailed chemical abundance patterns of UMP stars, it is possible to infer the main characteristics of their Pop. III progenitors, such as frequency, mass distribution, and explosion energies. Results suggest that at least two types of progenitors are needed at the lowest metallicities, to account for the observed chemical abundances of UMP stars in the Milky Way. These results place important constraints on the initial mass function at early times, as well as models of the chemical evolution of the Galaxy and the Universe. I will also present preliminary results from two new photometric surveys, aiming to find additional UMP stars in the Galaxy.

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Talk/Poster

Talk

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