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Exploring the Universe with Metal-Poor Stars

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One of the most important topics in modern astrophysics is understanding the formation and evolution of stars and galaxies. Recent works on the oldest, most metal-poor stars in the Galactic halo and satellite dwarf galaxies have shown that these and many topics, ranging from nuclear astrophysics to cosmology, can be studied with stellar chemical abundances ("stellar archaeology"). I will present the latest advancements in the field, including a hyper-iron poor star that indicates asymmetric first star explosions, and r-process enhanced stars in a dwarf galaxy that hold evidence to one of the first neutron star mergers after the Big Band.