

Z132r Revealing the chemical diversity in the outer halo

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Elemental abundances in old stellar populations in the Milky Way Galaxy provide valuable insights into the nucleosynthesis and chemical enrichment in the earliest epoch of the cosmic star formation history. Thanks to recent wide-field surveys of the stellar populations in our Galaxy, phase-space coordinates and chemical abundances of stars primarily in the Galactic inner halo ($\lesssim 10$ kpc) have become available, which can be used to infer the properties and the timing of the past dwarf galaxy accretion events to our Galaxy. On the other hand, kinematics and chemical abundances in the Galactic outer halo remain largely unexplored because of the faint apparent magnitudes for the vast majority of stars (e.g., main sequence stars).

The Prime Focus Spectrograph of Subaru Telescope has a unique capability of measuring chemical abundances in main-sequence and giant stars in the outer halo, which is essential to characterize the chemical diversity among Galactic old stellar populations. In this talk, I will review the implications for the metal enrichment in the early universe from observed chemical abundance measurements in the Galactic halo stars, specifically focusing on the prospects of revealing the chemical properties in the outer halo with PFS.