

# Metal Mixing in Galaxies as a Probe of Understanding Signatures from First Stars

*Friday, 7 December 2018 15:00 (20 minutes)*

Understanding the metal mixing in galaxies is a cornerstone to extract the signatures of first stars. Recent high-dispersion spectroscopic observations significantly widen our understanding of elemental abundances in metal-poor stars. Second generation stars inherit the abundances of nucleosynthetic signatures from first stars mixed in the interstellar medium. Here we show that abundances of heavy elements can be a tracer of metal mixing in the early universe. We performed a series of N-body/smoothed hydrodynamics simulations from the scale of star formation to the Milky Way. We find that the timescale of metal mixing is  $\sim 40$  Myr by using our high-resolution simulations of the enrichment of r-process elements and zinc in dwarf galaxies. This efficiency of metal mixing is consistent with the value constrained in our simulations of the scale of star formation. We also discuss the prospects by using state-of-the-art cosmological zoom-in simulations and future facilities such as Subaru PFS and TMT.

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## Talk/Poster

Talk

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**Session Classification:** Dwarf Galaxies