Contribution ID: 33

The initial mass function of the first stars inferred from elemental abundances in extremely metal-poor stars

Tuesday, 4 December 2018 10:35 (20 minutes)

We develop the code to fit observed elemental abundance patterns with the supernova yield models of the first (metal-free) stars. The yield models of first-star's masses in the range 13-100Msun with several different explosion energies are calculated based on the mixing-fallback model to approximately take into account the mixing and fallback of elements in aspherical explosions. We use this code to fit elemental abundance patterns of more than 200 extremely metal-poor ([Fe/H]<-3) stars compiled from literature. The results suggest that the mass function of the first stars that have contributed to the first chemical enrichment is peaked at ~ 25Msun with smaller contributions from lower-mass first stars. I will discuss their implications, limitations and the application to an expanded sample of extremely metal-poor stars.

Affiliation

Kavli IPMU / University of Tokyo

Talk/Poster

Talk

Primary authors: ISHIGAKI, Miho (IPMU, the Univ. of Tokyo); TOMINAGA, Nozomu; Prof. KOBAYASHI, Chiaki (University of Hertfordshire); Prof. NOMOTO, Ken'ishi (University of Tokyo)

Presenter: ISHIGAKI, Miho (IPMU, the Univ. of Tokyo)

Session Classification: Supernova Yields