

ASTROPHYSICS SEMINAR SERIES

Stellar Archaeology as a Time Machine to the First Stars

Dr. Tilman Hartwig
(IPMU, Tokyo)

Thursday, August 2

Noon - Rm 184 NSH

Understanding the nature of the first stars is a major challenge of modern cosmology. Despite their importance for the formation of subsequent stars and galaxies, their mass distribution is still uncertain due to a lack of direct observations. Extremely metal-poor stars in the Milky Way allow to constrain the mass of their progenitor supernovae and thereby provide precious information about the first generation of stars. I will give a general introduction to stellar archaeology, the main open questions, and discuss several of our recent results: I will present a new diagnostic to reliably distinguish mono-enriched from multi-enriched metal-poor stars, based on their elemental abundances. We apply this diagnostic to recently observed stars from the TOPoS survey, which allows us to better understand the nature of the first stars. Finally, I will present a novel scenario for the formation of carbon-enhanced metal-poor stars.



PHYSICS