

External Enrichment as a Pathway to Metal-Poor Star Formation

Wednesday, 5 December 2018 09:50 (30 minutes)

The physical conditions required for forming the first low mass stars are now understood to be a critical amount of heavy elements and some degree of turbulence to seed fragmentation. However, the transition from Population III to Population II has yet to be characterized in a global context. The process of external enrichment, in which a star-less halo is promptly enriched by the blast-wave from a nearby Pop III supernova, has been shown to be a viable channel for forming extremely metal-poor stars that trace a single progenitor. This is necessary for explaining the origins of the most metal-poor stars observed in the Milky Way. Beyond these rare events, what role does external enrichment play as structure formation and the gradual buildup of metals in the Universe continue? In this talk, I will present results from simulations extending past the first external enrichment event. I will discuss the physical conditions in metal-enriched star-forming environments that follow, including regions in which the metallicity exceeds the traditional gas-phase critical metallicity. I will also present measurements of the rates of external enrichment by single and multiple progenitors and discuss the consequences for metal-poor star searches within our own Galaxy.

Affiliation

University of California, San Diego

Talk/Poster

Talk

Primary author: Dr SMITH, Britton (University of California, San Diego)

Presenter: Dr SMITH, Britton (University of California, San Diego)

Session Classification: Transition to Pop II, Zcrit