



Contribution ID: 26

Type: **Contributed talk**

The Stellar Initial Mass Function in Low-Metallicity Gas

Wednesday 10 November 2010 16:20 (20 minutes)

It is widely believed that the initial mass function (IMF) of stars formed in metal-free gas – the so-called Population III stars – was very top-heavy, being dominated by very massive stars. On the other hand, the existence of very low metallicity halo stars demonstrates that it is possible to form low-mass stars with metallicities as small as $[\text{Fe}/\text{H}] \sim -5$. This implies that the presence of even a small amount of metals and/or dust may cause the stellar initial mass function to change significantly. Two main theories have been put forward to explain this, one centering on the role of atomic fine structure cooling at low densities, and the other on dust cooling at much higher densities. In this talk, I will discuss both of these theories and show how they can be combined to yield a single coherent picture for the origin of the IMF in low metallicity gas. I will also discuss some recent work that suggests that the Pop. III IMF may not be as different from the Pop. II IMF as previously thought.

Primary author: Dr GLOVER, Simon (Institute for Theoretical Astrophysics, Heidelberg)

Presenter: Dr GLOVER, Simon (Institute for Theoretical Astrophysics, Heidelberg)

Session Classification: Session 4

Track Classification: Early stars