

# The First Stars and Galaxies: Challenges for the Next Decade

March 18 - 21, 2010

Austin, Texas

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## Hosted by

The Department of Astronomy  
and Texas Cosmology Center at  
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AT&T Education and Conference Center  
1900 University Avenue  
Austin, Texas 78705

*We thank the McDonald Observatory and  
Department of Astronomy Board of Visitors  
Excellence Fund for the generous support of  
this conference.*

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The James Webb Space Telescope (JWST), Atacama Large Millimeter Array (ALMA) and a new generation of other ground-based instruments will soon glimpse the first primitive galaxies in the universe, yielding unprecedented insights into the masses the first stars, the luminosities and spectra of protogalaxies, and the chemical evolution of the early IGM. In the past few years numerical simulations of the formation of the first stars and galaxies have made significant strides, but considerable work remains to be done to put estimates of the primordial IMF and the morphology, brightness, and colors of primeval galaxies on firmer footing. Our aim is to congregate leading experts on JWST and ALMA with theorists in early structure formation to forge simulation roadmaps for the next several years.

## Topics Reviewed:

The primordial IMF  
Observational signatures of the first supernovae  
Low metallicity star formation and the Pop III/II transition  
Nucleosynthetic imprint of the first SNe on very low metallicity stars  
Protogalaxy models and observations  
Early black holes and the SMBH assembly process

