



SPRING '08 Colloquia

Refreshments at 3:15 PM, Talks at 3:30 PM in the John N. Bahcall Auditorium

www.stsci.edu/institute/sd/talks/Colloquia for updates

Wednesday March 5, 2008

Roelof de Jong, STScI

GHOSTS: Bulges, Halos, & Stellar Outskirts of Massive Disk Galaxies

In recent years we have started to appreciate that the outskirts of galaxies contain valuable information about the formation process of galaxies. In hierarchical galaxy formation the stellar halos and thick disks of galaxies are thought to be the result of accretion of minor satellites, predominantly in the earlier assembly phases. The size, metallicity, and amount of substructure in current day halos are therefore directly related to issues like the small scale properties of the primordial power spectrum of density fluctuations and the suppression of star formation in small dark matter halos.

I will show highlights from our ongoing GHOSTS HST/ACS/WFPC2 survey of the resolved stellar populations of 14 nearby, massive disk galaxies. I will show that the smaller galaxies ($V_{rot} \sim 100$ km/s) have very small halos, but that most massive disk galaxies ($V_{rot} \sim 200$ km/s) have very extended stellar envelopes. The luminosity of these envelopes seems to correlate with Hubble type and bulge-to-disk ratio, calling into question whether these are very extended bulge populations or inner halo populations. The change in RGB colors indicate that there are significant radial metallicity gradients in these halos, but the outskirts at 30 kpc are never as metal-poor as the Milky Way halo. The amount of substructure varies strongly between galaxies.