TATA INSTITUTE OF FUNDAMENTAL RESEARCH

DEPARTMENT OF ASTRONOMY & ASTROPHYSICS

Speaker : Prof. Puragra Guhathakurta

University of California Observatories / Lick Observatory, USA

Title : The Extended Stellar Halo of the Andromeda Spiral Galaxy and its Dwarf Satellites: Results from the SPLASH Survev

Day, Date & Time : Tuesday, 11 August , 2009 at 16.00 hrs

Venue : Lecture Theatre (AG-66)

Abstract

Detailed studies of nearby galaxies provide vital clues about their formation and evolutionary history. This "fossil record" approach is complementary to direct look-back studies of distant galaxies. Our Galaxy and the Andromeda spiral galaxy (M31) have long been cornerstones in the former category. M31 provides an external perspective on a large galaxy similar to our own and yet is close enough to allow detailed studies of individual stars.

I will present results from the SPLASH collaboration: Spectroscopic and Photometric Landscape of Andromeda's Stellar Halo. The collective data set from this large international team includes thousands of Keck/DEIMOS spectra of individual red giant branch stars, ground-based deep wide-field imaging and photometry with KPNO/Mosaic, CFHT/MegaCam, and Subaru/Suprime-Cam, and ultra-deep pencil-beam probes with HST/ACS imaging reaching below the main-sequence turnoff.

Our recent discovery of an extended stellar halo in M31 (R > 150 kpc) shows that most previous studies of its spheroid have been sampling its inner bulge-like spheroidal component, not its halo. In my talk I will touch upon several related topics related to the general theme of hierarchical galaxy formation including: M31's global structure and subcomponents (halo, bulge/central bar, and disk), stellar dynamics, statistical properties of substructure, detailed chemical abundance measurements, detailed forensic reconstruction of recent collision events, dwarf satellites as tracers and building blocks of larger galaxies, and empirical constraints on the tangential motion of the M31 system. I will also discuss recent results on the chemical abundance of the lowest luminosity Galactic satellites (recently discovered by SDSS) and implications for the formation of the Milky Way halo.