Area Seminar

Title	Cold atoms refrigeration of cold ions and cold molecule production in the presence of ions
Date and Time	03/05/2012 16:00:00
Speaker	S. A. Rangwala Raman Research Institute, Bangalore
Area	Theoretical Physics
Venue	Room No. 469
Abstract	We experimentally study the cooling of Rb ions in contact with Laser cooled Rb atoms. This experimental result is contrary to the widely held perception that in real ion traps, when ions and atoms have equal masses, the ions would heat out of the trap. We therefore re-examine the theory of collisional cooling of trapped ions by multiple scattering and understand the reasons for trapped ion cooling in this case. Numerical simulations of ion-atom multiple scattering bear out the experimental results. All of these studies show that the resulting ion atom system has an intrinsic stability, which is a crucial result for the prospects of physics with ion-atom mixed system. We shall then discuss the photo-association of molecules from cold atoms in the presence of ions. If time permits the most recent experiments on atom cavity coupling will be discussed, and its relevance to the molecule project explained.