Area Seminar

Title	Explaining Fermi-line and enhanced Higgs di-photon rate in the Triplet-Singlet extended MSSM
Date and Time	06/06/2013 16:00:00
Speaker	Tanushree Basak PRL, Ahmedabad
Area	Theoretical Physics
Venue	Room No. 469
Abstract	We propose an economic extension of minimal supersymmetric standard model with a SU(2) singlet and Y = 0 triplet, which can explain (i) the 125 GeV Higgs boson without fine tuning, (ii) the 130 GeV gamma-ray line seen at Fermi-LAT, (as well as a second photon line at 114 GeV)(iii) an enhanced Higgs di-photon decay rate seen by ATLAS, while being consistent with dark matter relic density and recent XENON 100 exclusion limits on spin-independent direct detection cross-section. We obtain the required cross-section of 10?27cm3s?1 for the 130 GeV gamma-ray flux through the resonant annihilation of dark matter via pseudoscalar triplet Higgs of mass ~260 GeV. The dark matter is predominantly bino-higgsino which has large couplings with photons (through higgsino) and gives correct relic ensity (through bino). We get the enhanced Higgs diphoton decay rate, R ~ 1.224, dominantly contributed by the light chargino-loops, which can account for the reported excess seen in the h to gamma gamma channel by ATLAS.