ICTS Seminar

Title   : Dark Matter searches at the LHC and beyond

Speaker : Nishita Desai, University of Montpellier, France

Date   : Tuesday, November 21, 2017

Time   : 2:00 PM

Venue   : Nambu Discussion Room (Left), ICTS Campus, Bangalore

Abstract : The existence of dark matter, first postulated to explain galactic rotation curves of stars is now firmly established by several independent pieces of evidence. As no particle in the Standard Model can be a dark matter candidate, many theoretical solutions have been proposed, most of them around the idea of a Weakly Interacting Massive Particle. Complete theories of dark matter predict several new particles for self-consistency, and these can be produced and observed at a collider experiment like the Large Hadron Collider (LHC). In this talk, I show how the LHC (and potential future collider) is an indispensable instrument in the multi-faceted, worldwide effort for dark matter detection. Searches at the LHC are complementary to direct and indirect detection experiments and, in some cases, the only search mechanism open to us. Using three levels of theory description — a UV complete theory (supersymmetry), simplified models, and Effective Field Theoretical techniques—I will demonstrate this complementarity and outline the future potential of LHC searches for Dark Matter.