Department of Theoretical Physics

Free Meson Seminar

Speaker	:	Diptimoy Ghosh
Topic	:	The constrained MSSM confronted with the low energy data
Day, Date & Time	:	Thursday, June 30, 2011 at 2:30 p.m.
Place	:	AG 69

Abstract

The recent Belle and BaBar measurements of the branching ratio of $B^+ \to \tau^+\nu_\tau$ indicate a significant deviation from the Standard Model prediction. I will demonstrate that this measurement has a serious impact on models with minimal flavor violation involving a charged Higgs boson, ruling out a large portion of the currently-allowed parameter space. In the constrained minimal supersymmetric standard model, this creates a tension between the measurements of $B^+ \to \tau^+\nu_\tau$ and the anomalous magnetic moment of the muon, unless $\tan\beta$ is small, $\mu > 0$, and A_0 takes a large negative value. In fact, a very small region of the parameter space of this model, with small values of m_0 and $m_{1/2}$, survives all the constraints at 95% C.L.. It is remarkable that this specific region is still consistent with the lightest supersymmetric particle as the dark matter. Moreover, it predicts observable SUSY signals in the early runs of the LHC, even perhaps at 7 TeV. I will also show that a consistent explanation for the deviation of the $B^+ \to \tau^+\nu_\tau$ branching ratio from the Standard Model can be achieved in a non-universal Higgs mass model, which could also predict early signals of supersymmetry at the LHC.

(Saumen Datta)