Higgs Mass at 3-Loop Order and Focus Point Dark Matter

Dr. Sanford will discuss the current status of TeV scale SUSY, focusing in particular on a recent analysis of the Higgs mass in supersymmetry using leading 3-loop effects at order \( \alpha_{\text{t}} \alpha_s^2 \) and on prospects for focus point dark matter. For O(1-10 TeV) scale superpartner masses the 3-loop contributions are generically positive and can be as large as several GeV, which has substantial implications for the preferred SUSY parameter space. The implications are particularly strong for the focus point in the CMSSM, where the preferred lightest neutralino mass range depends sensitively on the preferred scalar masses, and shifting the preferred region Higgs mass to smaller scalar masses greatly improves the possibilities for neutralino detection in dark matter experiments.