



Contribution ID: 371

Type: not specified

Light Stop Decay in the MSSM with Minimal Flavour Violation

Monday, August 29, 2011 3:00 PM (30 minutes)

For the correct interpretation of the experimental results of the supersymmetric (SUSY) particle searches an exact knowledge of the SUSY production cross sections and branching ratios is crucial. In SUSY scenarios with a light stop particle $stop_1$ and a small mass difference to the lightest supersymmetric particle (LSP) assumed to be the lightest neutralino, the flavour changing neutral current decay $stop_1 \rightarrow charm \text{ neutralino}_1$ can be the dominant decay channel and can exceed the four-body stop decay for certain parameter values. In the framework of Minimal Flavour Violation (MFV) this decay is CKM-suppressed, thus inducing long stop lifetimes. The decay width has been given some time ago by an approximate formula, which takes into account the leading logarithms of the MFV scale. We have revisited this decay and calculated the exact one-loop decay width in the framework of MFV. The comparison with the approximate result exhibits deviations of the order of 10% for large MFV scales due to the neglected non-logarithmic terms in the approximate decay formula. The large logarithms have to be resummed. The resummation is performed by the solution of the renormalization group equations. The comparison of the exact one-loop result and the tree level flavour changing neutral current decay, which incorporates the resummed logarithms, demonstrates that the resummation effects are important and should be taken into account.

Presenter: Dr MUHLLEITNER, Margarete (Karlsruhe Institute of Technology (KIT))

Session Classification: Parallel Session 4