



Enhancing detectability of tau-sneutrino NLSP using machine learning

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My Scenario

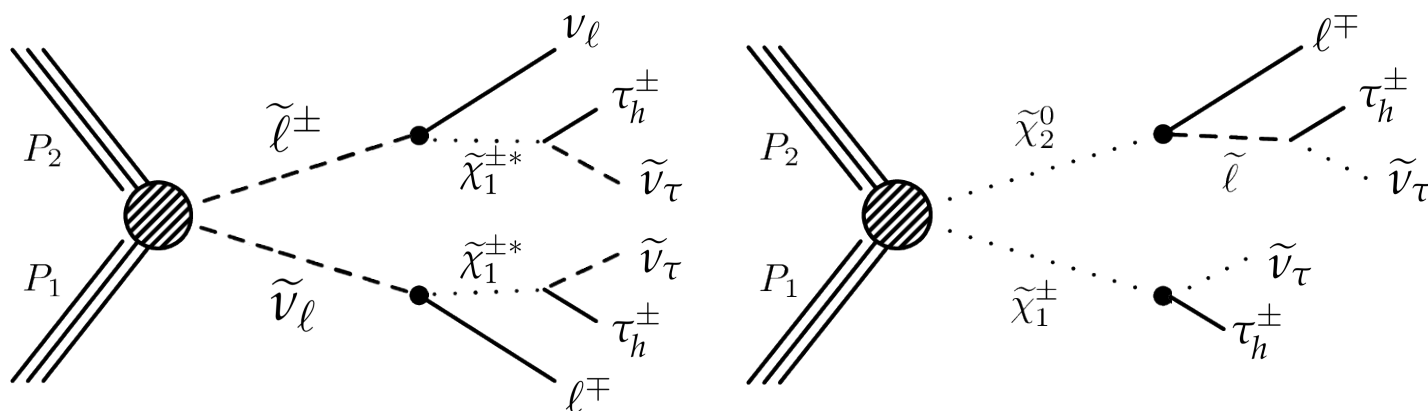
- CMSSM have no parameter point with tau-sneutrino as the next to lightest supersymmetric particle (NLSP)
- Need Non-Universal Higgs Masses (NUHM)
 - Not necessarily $m_{H_u} = m_{H_d} = m_0$
- The parameters: $(m_0, m_{1/2}, \tan \beta, A_0, m_{A^0}, \mu)$





Production Mechanisms

- Signal: $pp \rightarrow \tau_h^\pm \tau_h^\pm (e, \mu)^\mp + \cancel{E}_T$





Analysis

- Simulation is done in Herwig and Sherpa
- Deep Neural Network trained on observable features
- Use classifier instead of optimized cuts
- Compare classifier to optimized cuts
 - Result: 24% improvement

