

## Probing R-parity Violating Interactions via $p\bar{p} \rightarrow e\mu X$ Channel on Tevatron

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**Abstract:** We investigate the lepton flavor violation processes  $p\bar{p} \rightarrow e\mu X$  induced by R-parity violating interactions at the Tevatron hadron collider. The theoretical calculation and Monte Carlo simulation demonstrate that with a set of suitable cuts on experimental observables, one might be capable to reduce the standard model physical background to a controllable level so that the signals of R-parity violating interactions could be detected distinctively. Furthermore, clear sneutrino information can be abstracted from the purified event sample where other SUSY scalar quark "pollution" is heavily suppressed. We conclude that with a reasonable assumption of  $10 \text{ fb}^{-1}$  integrated luminosity, the experiments at the Tevatron machine would have potential to discover sneutrino in the region of  $m_{\tilde{\nu}} \leq 400 \text{ GeV}$  via lepton flavor violation  $e\mu$  production channels, or extend the mass scale constraint up to  $m_{\tilde{\nu}} \geq 550 \text{ GeV}$  at 95% CL.

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