

RPV SUSY Displaced Vertex Analysis

If RPV couplings are smaller than about 10^{-2} , as suggested by current limits, they will lead to late decaying LSPs, which might be observed in the form of highly displaced vertices with high mass and track multiplicity. Main backgrounds resulting from conversions and nuclear interactions with detector material are expected to be small. Monte Carlo QCD events as well as very first data are used to study expected backgrounds in detail. A dedicated vertex finder and trigger is being developed to maximize selection efficiency. The current analysis focuses on decays in the inner detector due to its unique coverage in coupling-space and LSP lifetimes. Since the analysis is independent of the SUSY spectrum production cross sections can be expected to be high. The analysis may reveal insight into new physics starting from day one as the investigated range of RPV couplings is totally unexplored so far.

For recent developments see: <https://twiki.cern.ch/twiki/bin/view/AtlasProtected/DisplacedVertexAnalysis> .