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Exploring neutrino physics at LHC via R-parity violating SUSY

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R-parity violating supersymmetric models (RPV SUSY) are becoming increasingly more appealing than its *R*-parity conserving counterpart in view of the hitherto non-observation of SUSY signals at the LHC. In this talk, RPV scenarios where neutrino masses are naturally generated will be discussed, namely RPV through bilinear terms (bRPV) and the “ μ -from- ν ” supersymmetric standard model ($\mu\nu$ SSM). The latter is characterised by a rich Higgs sector that easily accommodates a 125-GeV Higgs boson. The phenomenology of such models at the LHC is reviewed, giving emphasis on final states with displaced objects, and relevant results obtained by LHC experiments are presented. The implications for dark matter for these theoretical proposals is also addressed.

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