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Studying the $b \to s\ell^+\ell^-$ Anomalies and $(g-2)_\mu$ in RPV-MSSM Framework with Inverse Seesaw

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Inspired by the recent experimental results which show deviations from the standard model (SM) predictions of $b \to s\ell^+\ell^-$ transitions, we study the R-parity violating minimal supersymmetric standard model (RPV-MSSM) extended by the inverse seesaw mechanisms. The trilinear R-parity violating terms together with the chiral mixings of sneutrinos induce the loop contributions to the $b \to s\ell^+\ell^-$ anomaly. We study the parameter space of the single-parameter scenario $C_{9,\mu} = -C_{10,\mu} = C_{\rm V}$ and the double-parameter scenario $(C_{\rm V}, C_{\rm U})$ respectively, constrained by other experimental data such as $B_s - \bar{B}_s$ mixing, $B \to X_s\gamma$ decay, the lepton flavour violating decays, etc.. Both the single-parameter scenario and double-parameter scenario can resolve the long existed muon anomalous magnetic moment problem as well and allow the anomalous $t \to cg$ transition to reach the sensitivity at the Future Circular hadron-hadron Collider (FCC-hh).

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