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Quarks and Leptons generate Exotic Invariants in the SSM

Abstract

Recently it was shown that there are exotic pairs in the BRS cohomology of chiral SUSY in $3+1$ dimensions. These arise as solutions of constraint equations that depend on the parameters in the superpotential of the theory. We show that the quarks and leptons in the SSM generate solutions for these constraint equations, and we exhibit the relevant Exotic Invariants in detail. The question of related SUSY anomalies is also discussed. The exotic pairs couple to a new neutral chiral dotted superfield. It is also discussed and we show that the tachyons in its propagator can be removed by a simple mechanism.