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Hidden/Observable Sector Symmetries from Heterotic Strings.

BEN DUNDEE, Baylor University, JOHN PERKINS, Baylor University, AMD, GERALD CLEAVER, Baylor University — As a rule, phenomenologically viable string models have matter which is not charged under the standard model gauge group, but rather under other gauge groups. In this research, we have attempted to construct a model in which there is complete symmetry between the hidden and observable sector, using the free fermionic formulation of the heterotic string. Despite symmetric boundary conditions between the two sectors, an asymmetry in the GSO projection prohibits the low energy effective field theory from exhibiting sector symmetry. In the specific examples shown, an expected non-chiral Pati-Salam mirror universe model— $[SU(4)_C \times SU(2)_L \times SU(2)_R]^O \times [SU(4)_C \times SU(2)_L \times SU(2)_R]^H$ —is transformed into a chiral model with enhanced hidden sector gauge symmetry and reduced observable sector gauge symmetry— $[SU(4)_C \times SU(2)_L]^O \times [SO(10) \times SU(2)_R]^H$.

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