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Topologically stable, finite energy electroweak-scale monopoles

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The existence of a magnetic monopole, if it exists, remains elusive. Experimental searches have been carried out and are continuing in this quest. Of great uncertainty is the mass of the monopole which is model-dependent and ranging from some Grand Unified scale to the electroweak scale. In this paper, we propose a model where topologically stable, finite-energy monopoles {\em \'{a} la} 't Hooft-Polyakov could exist with a mass proportional to the electroweak scale. This comes about in a model of neutrino masses where right-handed neutrinos are {\em non-sterile} whose electroweak-scale Majorana masses are obtained by the coupling to a complex {\em triplet} Higgs field. Custodial symmetry which insures $M_W = M_Z \cos\theta_W$ requires the introduction of another triplet Higgs field but {\em real} this time. It is this {\em real Higgs triplet} that is at the core of our proposal.

Summary

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