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Confronting Finite Unified Theories with low-energy phenomenology

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Finite Unified Theories (FUTs) are N=1 supersymmetric Grand Unified Theories that can be made all-loop finite. The requirement of all-loop finiteness leads to a severe reduction of the free parameters of the theory and, in turn, to a vast number of predictions. Here SU(5) FUTs are investigated in the context of low-energy phenomenology observables. We present a detailed scanning of these FUTs, including theoretical uncertainties at the unification scale and applying all phenomenological constraints. Taking into account all low-energy restrictions, such as the anomalous magnetic moment of the muon, b physics observables, bound on the lightest Higgs boson mass and the constraints from cold dark matter density, we can discriminate between different interesting models. We present the predictions of the allowed parameter space for the Higgs boson sector and the supersymmetric particle spectrum of the model that survives the imposed constraints.

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