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Axion Predicitons in SO(10)xU(1) GUT models

Thursday 24 May 2018 14:00 (20 minutes)

Non-supersymmetric Grand Unified SO(10) × U(1)PQ models have all the ingredients to solve several fundamental problems of particle physics and cosmology —neutrino masses and mixing, baryogenesis, the non-observation of strong CP violation, dark matter, inflation —in one stroke. The axion —the pseudo Nambu-Goldstone boson arising from the spontaneous breaking of the U(1)PQ Peccei-Quinn symmetry —is the prime dark matter candidate in this setup. We determine the axion mass and the low energy couplings of the axion to the Standard Model particles, in terms of the relevant gauge symmetry breaking scales. We work out the constraints imposed on the latter by gauge coupling unification. We discuss the cosmological and phenomenological implications.

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