

Enhanced Axion-Photon Coupling in a GUT with Hidden Photon

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There is a novel way to achieve the gauge coupling unification with an unbroken hidden $U(1)$ symmetry. In this case, a kinetic mixing and a hidden coupling are required to be large. Consequently, the axion-photon coupling is significantly enhanced if one employs the Peccei-Quinn solution to the strong CP-problem. We show that this enhanced coupling can be tested in various future experiments.

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