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Non-vanilla Axion Solutions to the Strong CP Problem

Tuesday 3 December 2024 17:30 (15 minutes)

I discuss the status of model-building for the strong CP problem, emphasizing the phenomenology non-vanilla models that enhance or lighten the axion mass. Particular importance is placed on the emergence of the global Higgs symmetries in multi-scalar field theories and various explicit, anomalous, and soft-breaking contributions to select the Peccei-Quinn symmetry and the axion. Models with enhanced axion masses feature new colored states that may be accessible at high-energy colliders, while models that lighten the axion mass generally involve fine-tuning. Nonetheless, such fine-tuning can be ameliorated with a Nelson-Barr extension.

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