

## Heavy axion in Composite Higgs model

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We present a UV-complete extension of the Standard Model based on the gauge group  $(SU(5) \times SU(3)_c \times Sp(2)_{TC}) \times SU(2)_L \times U(1)_Y$ , which breaks in two steps to QCD and a technicolor sector. Three axions cancel the three  $(\theta)$ -terms. Small instantons from the confining  $(SU(3)_c)$  and  $(Sp(2)_{TC})$  sectors generate axion potentials, raising their masses to the eV range—well above the QCD axion. The model includes a composite Higgs  $(SU(4)/Sp(4))$  yielding a 125 GeV Higgs. Anomaly cancellation is verified. This provides a concrete “hypercolored axion” realization with multiple heavy axions.

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