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Precision Higgs Couplings in Neutral Naturalness Models

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The naturalness problem motivates new physics beyond the Standard Model (SM). The Higgs sector in neutral naturalness models provides a portal to the hidden QCD sector, and thus Higgs coupling measurements play a central role in exploring the model parameter space. We investigate a class of neutral naturalness models, in which the Higgs boson is a pseudo-Goldstone boson with the radial mode at the TeV scale. Integrating out the radial mode, we obtain various dimensional-six operators in the SM effective field theory, and calculate the low energy effective Higgs potential with radiative corrections. With Higgs precision measurements at a future Higgs factory, we explore the implication on the model parameter spaces. We also study the constraints from the future electroweak precision measurements. And we find that both Higgs and electroweak precision measurements at the future lepton colliders lead to comparable limits.

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