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pNGB Higgs Naturalness at a Tipping Point

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For pNGB-based approaches, the phenomenological question of Higgs naturalness finds itself at a tipping point between direct searches and precision. As we look ahead to the HL-LHC era and beyond, a scenario in which all measurements remain Standard Model-like would only sharpen the naturalness tension, driven increasingly by precision constraints. To illustrate this from a fresh perspective, we construct a maximally natural model, throwing into the mix three approaches to symmetry-based naturalness: Supersymmetry, Twin Higgs, and Gegenbauer-like pNGB Higgs models. We use the 'Kitchen Sink' model to discuss the interplay between direct exploration and precision, and the implications for FCC-ee and FCC-hh.

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