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Vector and Axial-vector Resonances from a Fundamental Composite Higgs Model

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We provide a non-linear realisation of composite Higgs model in the context of $SU(4)_0 \times SU(4)_1/Sp(4)$ symmetry breaking pattern, where the effective Lagrangian of the spin-0 and spin-1 resonances in this model is constructed via the CCWZ prescription. We investigate the EWPT constraint in this model by accounting the effects from reduced Higgs couplings and integrating out heavy spin-1 resonances. The fermionic contents for those resonances can be constructed in a fundamental gauge theory with two Dirac fermions. This model provides rich candidates of composite spin-1 resonances, phenomenologies of these neutral and charged states are analysed for the hadronic colliders with $\sqrt{s} = 13$ TeV and $\sqrt{s} = 100$ TeV. In particular, we recast the most recent Run II exclusion bounds on the full parameter space from Drell-Yan and di-bosons processes. These results serve as a guideline for searches of new vector and axial-vector resonances at the LHC and a future 100 TeV collider.

Primary author(s) : Dr. DEANDREA, Aldo (IPNL, France); Dr. FRANZOSI, Diogo Buarque (Universitat Gottingen, Germany); Dr. CACCIAPAGLIA, Giacomo (IPNL, France); CAI, Haiying (IPNL, France); Dr. FRANDSEN, Mads (CP3-Origins, Denmark)

Presenter(s) : CAI, Haiying (IPNL, France)

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