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Progress on the spectroscopy study of the composite Higgs model with $Sp(4)$ gauge theory and multiple fermion representations

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We report our preliminary results for the mass spectrum of the $Sp(4)$ gauge theory coupled to two Dirac fermions transforming in the fundamental representation and three transforming in the antisymmetric representation, which serves as an ultra-violet completion of the strongly interacting gauge sector in a composite Higgs model. We mainly focus on the mass of the top partners in the context of top partial compositeness—chimera baryons. We employ Wilson fermions in fully dynamical simulations and utilize smearing techniques and the GEVP to extract the masses.

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