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Flavour singlet mixing in Sp(4) gauge theory with fermions in multiple representations

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We study the pseudoscalar flavour-singlet mesons of Sp(4) gauge theory with two distinct fermion representations. The model contains two fundamental and three anti-symmetric Dirac fermion. It is a minimal realization of a composite Higgs scenario with partial top compositeness. We determine both the masses and the mixing angles of the states associated with the global U(1) symmetries, one of which, is expected to be broken by the axial anomaly. These states complete the sector of pseudo-Nambu-Goldstone bosons present in this theory.

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