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## Electroweak Flavour Unification

*Saturday, 9 July 2022 10:30 (15 minutes)*

We propose that the electroweak and flavour quantum numbers of the Standard Model (SM) could be unified at high energies in an  $SU(4) \times Sp(6)_L \times Sp(6)_R$  anomaly-free gauge model. All the SM fermions are packaged into two fundamental fermion fields, thereby explaining the origin of three families. The SM Higgs, being electroweakly charged, necessarily becomes charged also under flavour when embedded in the UV model. It is therefore natural for its vacuum expectation value to couple only to the third family. The other components of the UV Higgs fields are presumed heavy. Extra scalars are needed to break this symmetry down to the SM, which can proceed via 'flavour-deconstructed' gauge groups. When the heavy Higgs components are integrated out, realistic quark Yukawa couplings with in-built hierarchies are naturally generated without any further ingredients.

### In-person participation

Yes

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