

# Flavour Non-Universal Extensions of the Standard Model

Thursday, 4 July 2024 12:40 (5 minutes)

Option 1 for Talk / Poster: In this talk, we present a family-non-universal extension of the Standard Model where the first two families feature both quark-lepton and electroweak-flavour unification, via the  $SU(4) \times Sp(4)_L \times Sp(4)_R$  gauge group, whereas quark-lepton unification for the third family is realised 'à la Pati-Salam.

Via staggered symmetry breaking steps, this construction offers a natural explanation for the observed hierarchical pattern of fermion masses and mixings, while providing a natural suppression for flavour-changing processes involving the first two generations. If time permits, we will connect this work with an on-going project featuring flavour non-universality and Higgs compositeness.

Option 2 for Talk / Poster: In Effective Field Theories, evanescent operators are introduced to compensate for the breakdown of four-dimensional Dirac identities (e.g. Fierz Identities) when used in combination with dimensional regularization.

In this talk, we provide an alternative approach where contributions of evanescent operators are viewed as corrections to  $d = 4$  Dirac relations. This new perspective not only simplifies computations but provides a clearer understanding of the treatment of these evanescent contributions in the context of NLO change of operator bases.

## Title of the Poster/Talk

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## Related Papers/Preprints

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