## FLASY 2025 - 11th Workshop on Flavour Symmetries and Consequences in Accelerators and Cosmology



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## Flavor puzzle in three Higgs-doublet models: Insights from BGL and lessons from flavor data

Thursday 3 July 2025 14:30 (20 minutes)

We study a variant of the 3HDM, referred to as the BGL-3HDM, incorporating a U  $(1)_1 \times U(1)_2$  symmetry, which can distinguish the primary sources of mass for different fermion generations. In the version considered here, the Yukawa matrices in the down-quark and charged lepton sectors are diagonal, thereby eliminating tree-level FCNCs in these sectors. FCNCs mediated by neutral nonstandard Higgses are confined to the upquark sector only. No new BSM parameters are introduced by the Yukawa sector of the model, making it as economical as the NFC versions of 3HDM with a  $U(1)_1 \times U(1)_2$  symmetry in terms of the number of free parameters. However, even in the down-quark and in the charged lepton sectors, flavor diagonal but nonuniversal Higgs couplings set this model apart from the NFC versions of the 3HDM.

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