

# The XXIX International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY 2022)



Contribution ID: 186

Type: not specified

## Flavour Anomalies Meet Flavour Symmetry

*Tuesday 28 June 2022 18:00 (20 minutes)*

There is growing evidence for lepton-flavour non-universality, notably due to recent measurements of the magnetic moment of the muon and the LFU ratios  $R(D)$  and  $R(D^*)$ . We propose a model involving a scalar leptoquark which can ameliorate the tensions with the SM prediction in either case, while accommodating the mass hierarchies and mixing of the charged SM fermions. Crucially, the interaction structure of the model is entirely fixed via a discrete flavour symmetry. We find that the most stringent constraints on the parameter space arise from the experimental bounds on  $\text{BR}(\tau \rightarrow \mu\gamma)$  and  $\text{BR}(\mu \rightarrow e\gamma)$ . Apart from these radiative cLFV decays, an explanation of the anomalous magnetic moment of the muon might be accompanied by signals in upcoming searches for  $\mu \rightarrow 3e$  and  $\mu - e$  conversion in aluminium, as well as  $\tau \rightarrow 3\mu$  if the leptoquark is sufficiently light. We also highlight opportunities to further test and potentially constrain our model in the near future, including searches for the electric dipole moment of the muon and measurements of the axial-vector coupling of the  $Z$  boson to muons.

**Authors:** HAGEDORN, Claudia; BIGARAN, Innes (The University of Melbourne); SCHMIDT, Michael (UNSW Sydney); FELKL, Tobias (University of New South Wales)

**Presenter:** FELKL, Tobias (University of New South Wales)

**Session Classification:** Flavour physics: Theory and Experiment