

## Accidental Peccei-Quinn symmetry in a model of flavour

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In Peccei-Quinn (PQ) solutions to the strong CP problem, a global  $U(1)_{PQ}$  symmetry is typically added by hand. However,  $U(1)_{PQ}$  need not be exact: it may arise from discrete symmetry, provided the PQ solution is protected to sufficient order. We present a rather complete model, based on Pati-Salam unification and  $A_4$ , wherein such discrete symmetries are the very same symmetries that govern quark and lepton flavour. The QCD axion itself resides within  $A_4$  triplet flavons, which dictate fermion Yukawa structures; axion and flavour scales are firmly linked. Potentially viable avenues for testing the model include: (1) model fitting to quark and lepton mixing, (2) flavour-violating meson and lepton decays, (3) dark matter.

**Presenter:** BJÖRKEROTH, Fredrik (INFN-LNF)

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