

# Phenomenology 2018 Symposium



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## Clockwork Neutrino Models

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The clockwork framework can generate exponentially small couplings in theories with no input small parameters, and is especially suited to explain the hierarchically small neutrino masses. We consider the phenomenology of a discrete clockwork theory with a Dirac Standard Model neutrino (unlike in seesaw models) and  $N$  additional Dirac neutrinos. Exact diagonalisation of the mass matrix with Yukawa couplings to the SM is challenging, and we find analytic solutions for the spectrum and couplings using a large- $N$  expansion. We consider lepton-flavour violation and precision electroweak constraints on this model, and we also discuss the potential of present or future colliders to discover the TeV-scale excited neutrino states predicted by the model.

### Summary

**Primary author:** KURUP, Gowri (Cornell University)

**Presenter:** KURUP, Gowri (Cornell University)

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