# APCTP SEMINAR

# Gauged Neutrino self-interactions, the Hubble tension and XENON1T excess

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## August 4th (Thu.) 16:00 Online via ZOOM

I will introduce arguably the simplest extension of the Standard Model which leads to renormalizable long-range vector-mediated neutrino self-interactions.

Discussing bounds on the parameter space, we will see that there are unconstrained regions with four-neutrino interactions of a strength similar to what has been discussed to resolve the cosmological Hubble tension. In another region of parameter space the excess in electron recoil events recently observed by XENON1T could be explained. In any case, the extended gauge and scalar sectors lead to signatures in invisible Higgs and Z decays, unequivocally relating neutrino selfinteractions to precision measurements at the LHC and future colliders. Curiously, the model requires hidden neutrinos in a mass and mixing range which has been discussed in attempts to resolve short baseline neutrino oscillation anomalies.

#### ZOOM Webinar

- Please register through this ZOOM link (password is 0) <u>https://us06web.zoom.us/meeting/register/tZArdugsrzluGtf6ZbGm9w7Jd2M1k5Y7MWnB</u>
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- 3) Please rename your profile E.g. Full name (affiliation)

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