

# PARTICLEFACE 2021: Unraveling New Physics Workshop & Management Committee Meeting



Contribution ID: 4

Type: **Submitted Talk**

## One-loop corrections to light neutrino masses in gauged $U(1)$ extensions of the standard model

*Wednesday 14 July 2021 11:30 (30 minutes)*

We consider gauged  $U(1)$  extensions of the standard model of particle physics with three right-handed sterile neutrinos and a singlet scalar. The neutrinos obtain mass via the type I seesaw mechanism. We compute the one loop corrections to the elements of the tree level mass matrix of the light neutrinos and show explicitly the cancellation of the gauge dependent terms. We present a general formula for the gauge independent, finite one-loop corrections for arbitrary number new  $U(1)$  groups, new complex scalars and sterile neutrinos. We estimate the size of the corrections relative to the tree level mass matrix in a particular extension, the super-weak model. The talk will be based on arXiv: 2104.14571 and 2105.13360

**Authors:** Dr IWAMOTO, Sho (ELTE Eotvos Lorand University); KÄRKKÄINEN, Timo (Eötvös Loránd University); TROCSANYI, Zoltan Laszlo (University of Debrecen (HU)); Dr PELI, Zoltan (ELKH-DE Particle Physics Research Group)

**Presenter:** TROCSANYI, Zoltan Laszlo (University of Debrecen (HU))

**Session Classification:** Working Group Meeting