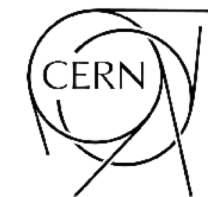


Heavy neutral lepton (HNL) production searches at NA62



Three Generations of Matter (Fermions) spin 1/2

	I	II	III	
mass	2.4 MeV	1.27 GeV	171.2 GeV	0
charge	2/3	2/3	2/3	0
name	Left u Right up	Left c Right charm	Left t Right top	0 g gluon
Quarks	Left d Right down	Left s Right strange	Left b Right bottom	0 γ photon
	Left ν_e Right N_1 electron neutrino sterile neutrino	Left ν_μ Right N_2 muon neutrino sterile neutrino	Left ν_τ Right N_3 tau neutrino sterile neutrino	91.2 GeV Z weak force
Leptons	Left e Right electron	Left μ Right muon	Left τ Right tau	80.4 GeV W[±] weak force
				>114 GeV H Higgs boson
				spin 0

Bosons (Forces) spin 1

- SM extension with 3 additional right-handed singlet Majorana HNL (not observed yet)
- Could account for baryon asymmetry of the universe, dark matter, neutrino masses and oscillations

- NA62: fixed target experiment in CERN SPS. Main goal: 20% measurement of $BR(K^+ \rightarrow \pi^+ \nu \nu)$ with 20% precision
- HNL production searches on 2015 minimum bias data: look for peaks in missing mass distribution in $K^+ \rightarrow l^+ N$ decays
- No HNL signal observed
- Results improve world existing limits on HNL production searches. Possible improvements with 2016–2018 data

