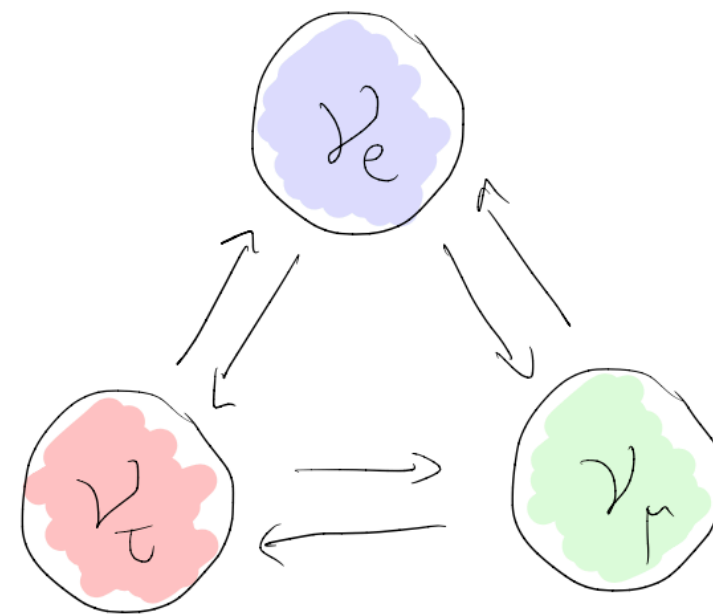


CLFV and Neutrinos



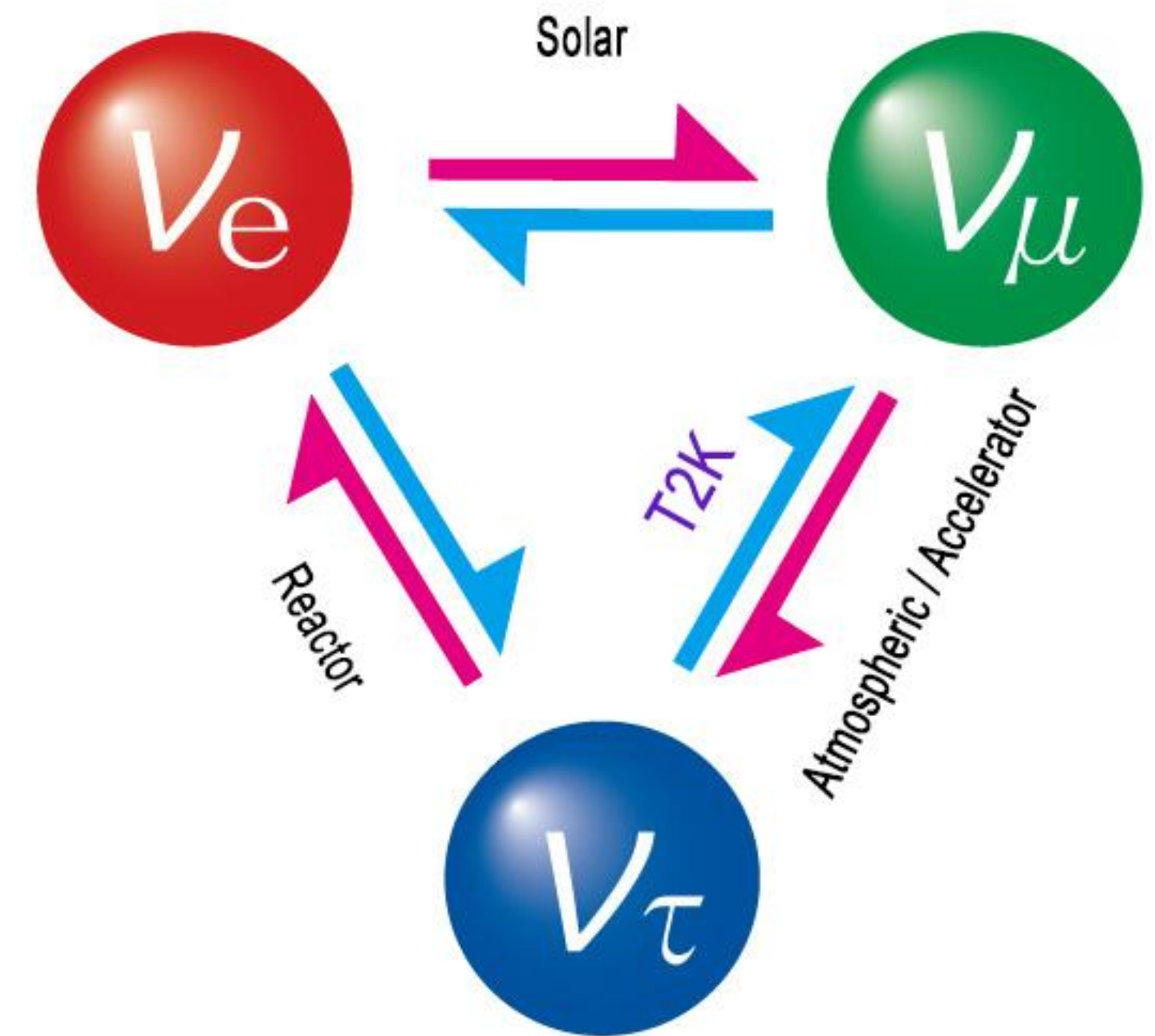
Innes Bigaran (Fermilab and Northwestern)
Ryan Plestid (Caltech)
Anil Thapa (Virginia U.)

Fermilab Accelerator Complex Evolution (ACE) Workshop, 2023

Neutrino Physics | motivation

See e.g. Andre de Gouvea, Georgia Karageorgi's talks yesterday

- Neutrinos are a probe of *lepton flavor symmetries*.
- Observed masses imply that there *must exist new physics* below the Planck scale.
- Measurements of mixing angles may supply window into physics beyond the SM that is responsible for the generation of neutrino masses.
- Massive neutrinos may imply violation of lepton number as well as lepton flavor

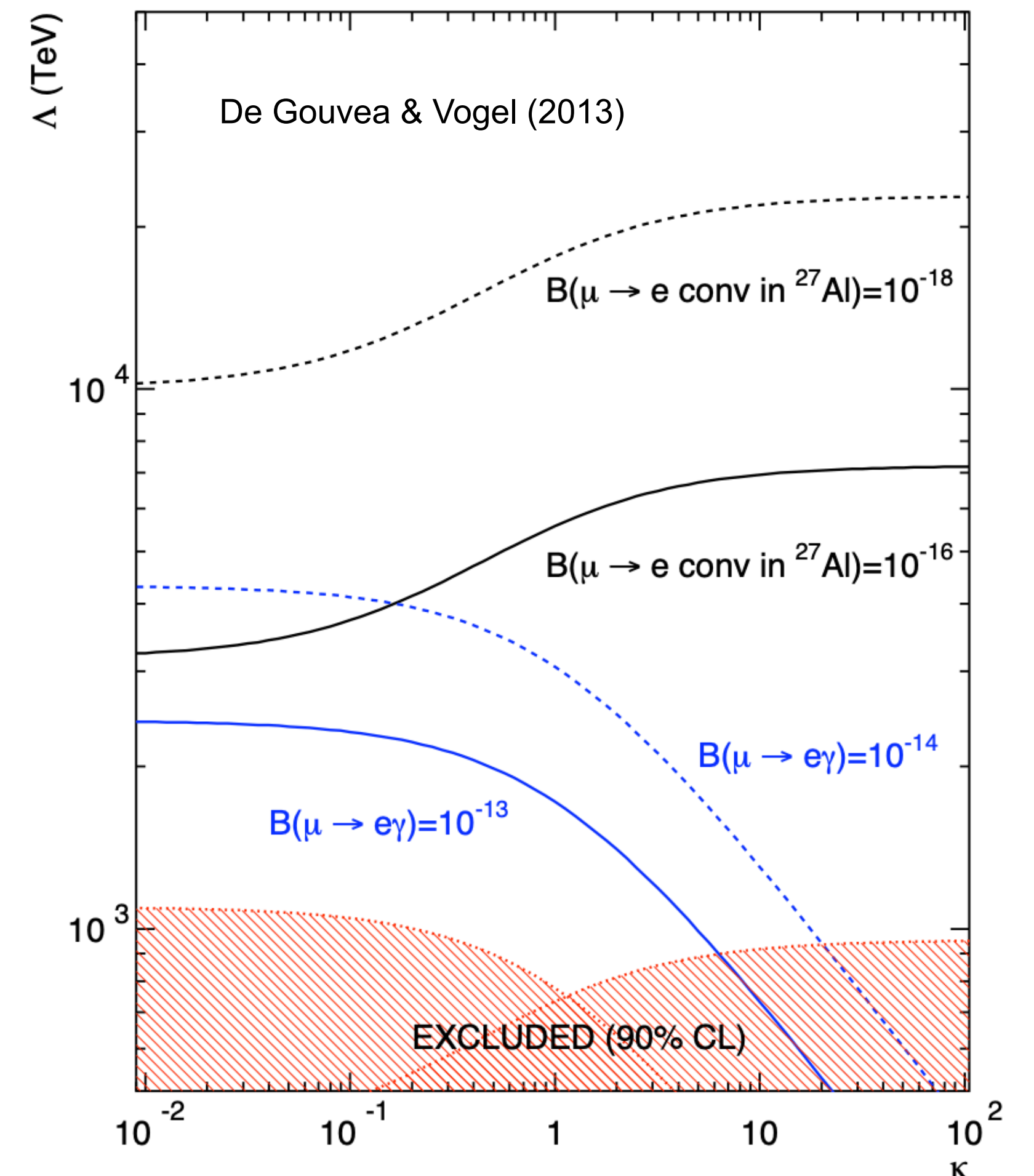


Neutrino oscillation between three generations

CLFV | motivation & connection to ν

See e.g. Vincenzo Cirigliano, Yuri Oksuzian, Sophie Middleton, Eric Prebys yesterday

- Neutrinos provide *explicit empirical* evidence that $L_{e,\mu,\tau}$ are broken in nature. *A priori* there is no reason to expect physics beyond the SM to obey these symmetries.
- SU(2) symmetry links neutrinos and charged leptons
- New physics that mixes neutrinos “generically” mix charged leptons as well -> Correlated signals
- CLFV and neutrino experiments provide complementary probes of new physics



Connecting to FNAL ACE



Summarised from the FNAL ACE report

Where: Level 13,
WH13SW-
Disappearance

Also, contribute here



Discussion session

1. CLFV experiments
2. Neutrino experiments
3. Complementarity of 1&2
4. Open floor