Remark:
Novel approaches for neutrino sources

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3/22/2023

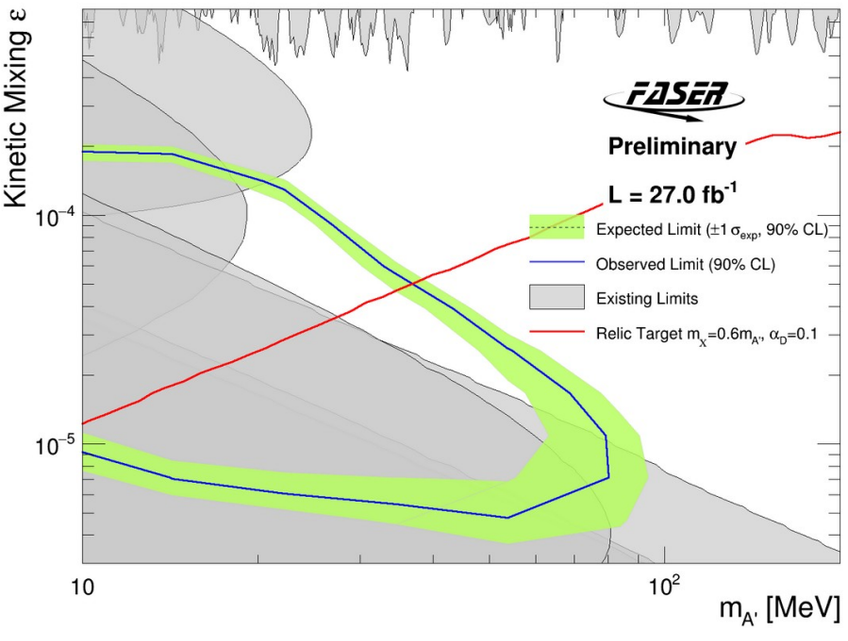
Where do my neutrinos come from?
The common particle physicist's view:

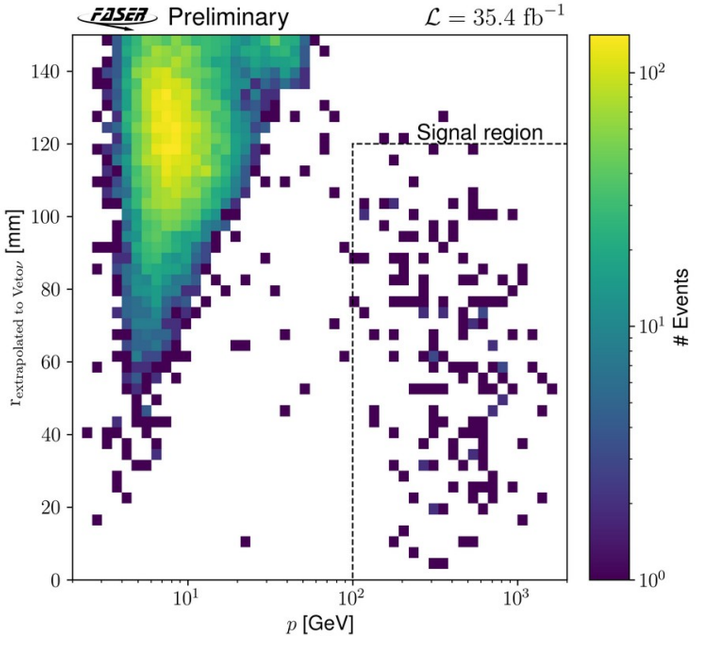
Source development is just as important as detector development

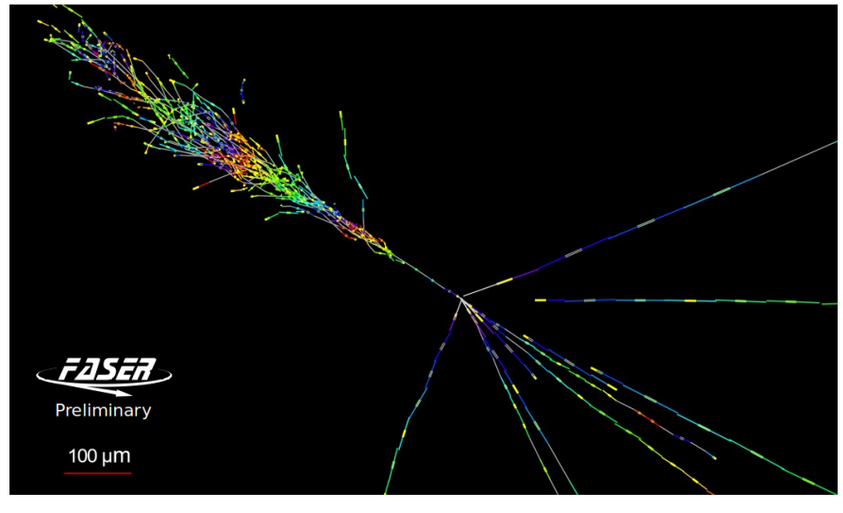
- Neutrino detection technology has just undergone a seismic paradigm shift. A similar paradigm shift in neutrino sources can take us into new physics territory.

- The development and realization of truly novel neutrino sources should be explicitly recommended by P5!

Novel neutrino source example: FASER recently announced first observation of collider neutrinos! (provides new window into studying high-E neutrinos and new-territory in dark matter search)

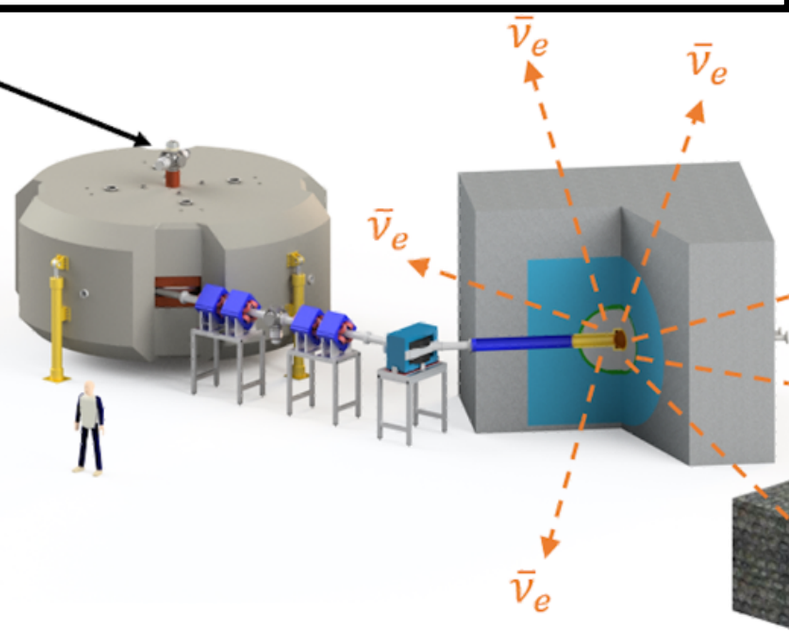




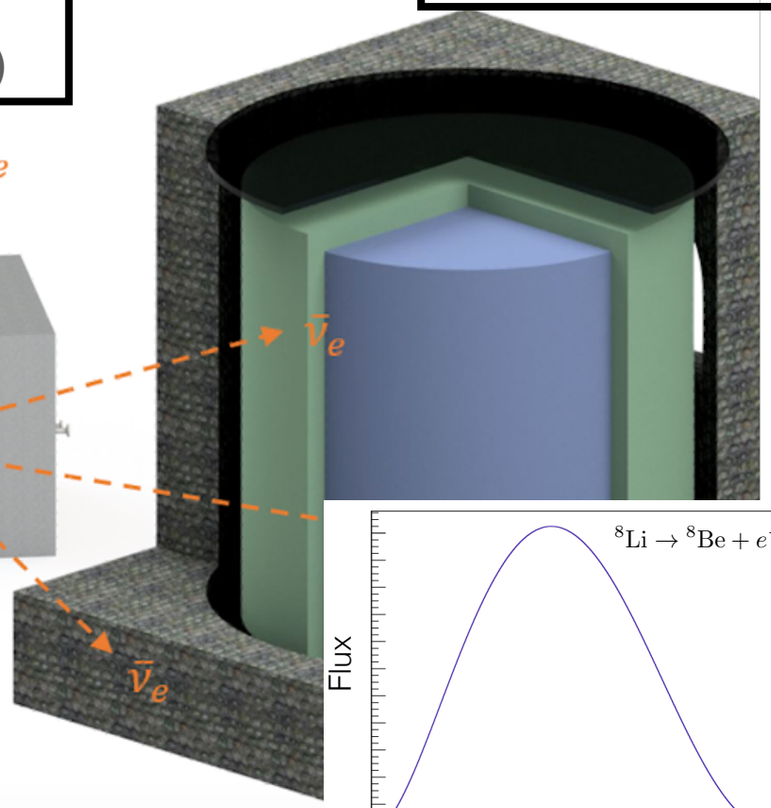


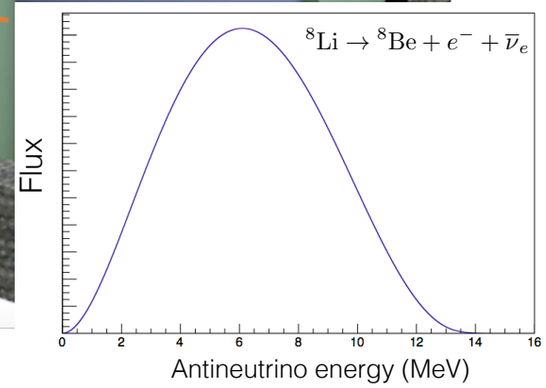
New approach: an underground accelerator (IsoDAR)

A cyclotron driver that has x10 more power than on-market machines (very valuable spin-off for our field!)



IsoDAR@LSC detector in Korea





A decade of NSF/Heising-Simons/University sponsored development to establish the cyclotron and target.

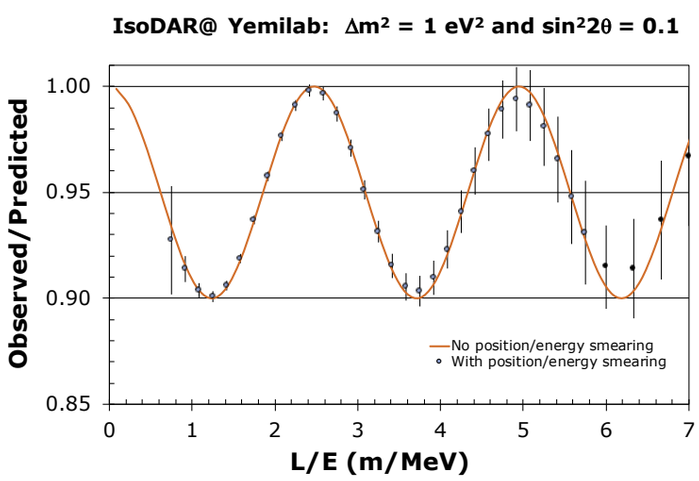
Awards for the design from accelerator physics (Hogil Kim Award) and APS DPF (Instrumentation award).

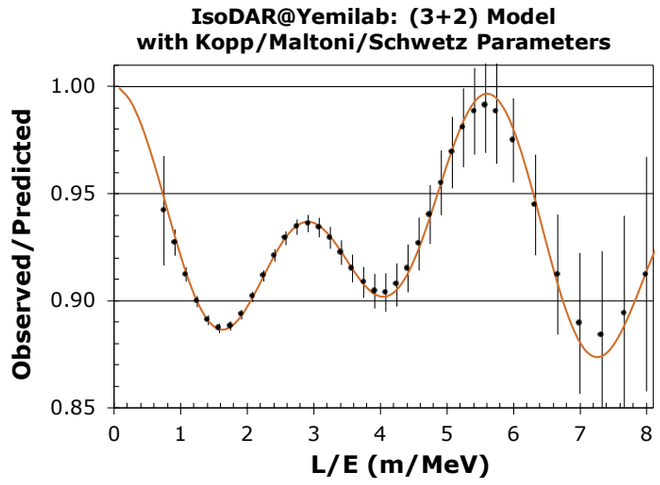
Unique 8Li beta-decay flux for BSM searches:

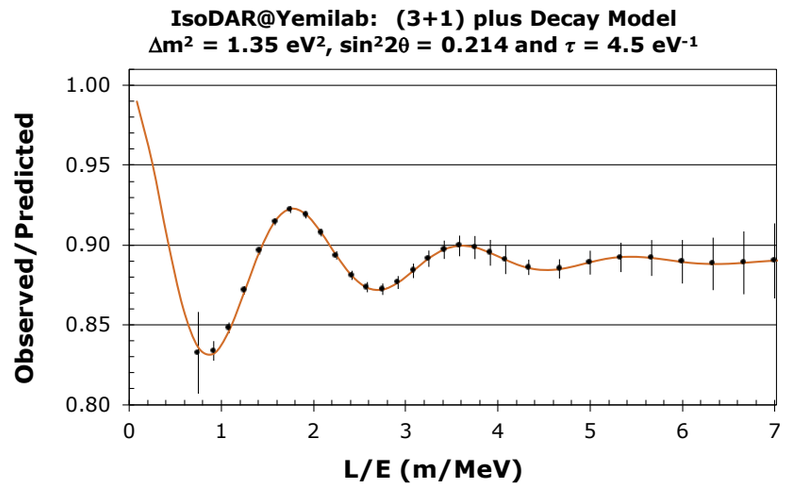
- ✓ Single, well-understood decay
- ✓ Peak at relatively high energy
- ✓ Negligible beam background
- ✓ Deep underground
- ✓ Well understood cross section (IBD)
- ✓ Very high production rate
- ✓ Easy on/off

What can this novel source do?

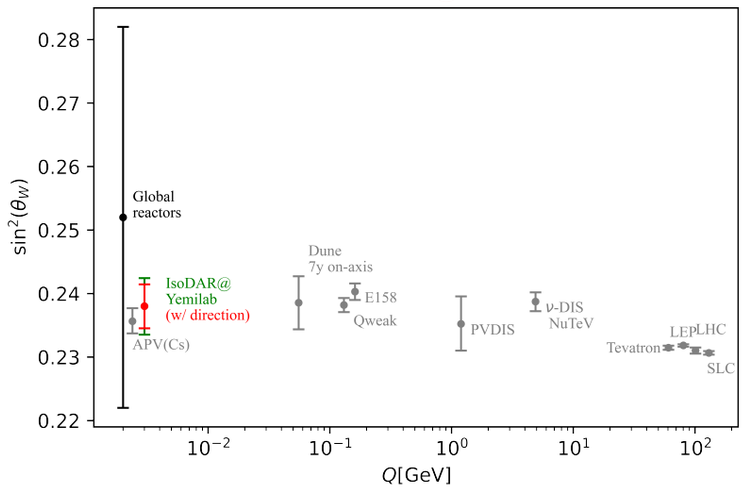
Extreme sensitivity to any kind of new oscillations

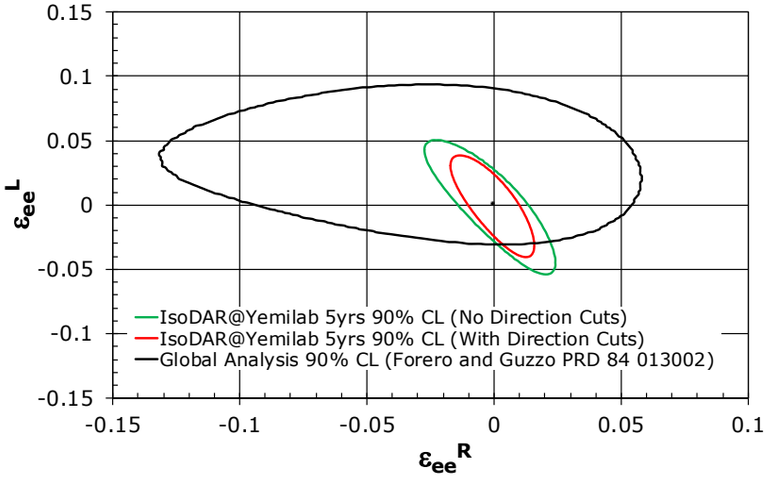


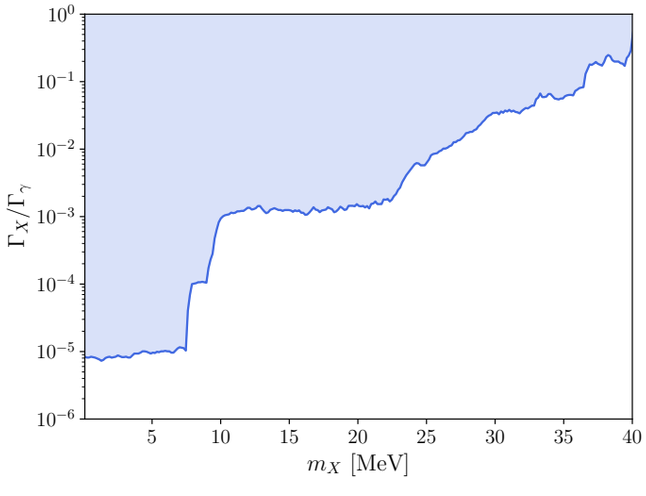




World-leading electroweak studies with $\overline{\nu}_e - e^-$ and new searches for low-mass mediators







New searches for ALP-like particles, mirror neutrons, n-nbar oscillations, and more…