

NF10: Neutrino Detectors

Klein, Machado, Schmitz, Strauss

Multiple ways to organize topics:

- ❑ Detectors by Physics Topics
- ❑ Detectors by technology
- ❑ Detectors by enabling technology

By Physics Topic:

- Long baseline oscillations
- Reactor antineutrino oscillations
- Solar/supernova/low-energy natural source neutrino detectors
- High-energy astrophysical neutrinos
- Neutrinoless double beta decay
- Direct neutrino mass measurements
- Other neutrino properties (electric dipole, magnetic dipole...)
- Sterile neutrino searches
- Other non-standard neutrino searches (e.g., high-mass neutrinos)
- Cosmic (background) neutrinos
- Broad program detectors (ie, most or all of above)
- Neutrino interactions
 - near detectors
 - CEVNS

Detectors by technology:

- LArTPCs (wires/pixels/phases)
- Other TPCs
- Water/Ice Cherenkov
- Water-based liquid scintillator
- Liquid scintillation detectors
- Hybrid scintillation/Cherenkov detectors
- Nobel liquid scintillator
- Solid-state detectors
- Segmented detectors
- Plastic scintillator
- Inorganic scintillator
- Cryogenic (mK) detectors
- Bolometric detectors

Detectors by enabling technology:

- Pixels for charge
- Pixels for light and charge
- New photon sensors (new PMTs, SIPMs, etc.)
- New photon collection approaches (ARAPUCAs, dichroicons, etc.)
- Spectrometry (e.g., HUNTER)
- New quantum sensors
- Machine learning approaches
- New materials (water-based liquid scintillator, LiquidO, etc.)
- New “loading” techniques (Gd, Te, Li, etc.)
- New purification techniques