# Towards a coherent strategy of Calibration Systems
## *What are key systems and what are cross checks?*

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*Finite human/time*

# Radioactive sources

- Deployed: shared space, run plan
  - *Priority!* 9 MeV source, very close to real SN signal
  - Additional sources potentially, once above demonstrated.
  - y direction scan, guaranteed longevity
- In fluid: Ar39 vs. (*lower priority)* Thoron?
  - How do we “see” the flow pattern? can we read detector with that rate?
- On cathode:
  - z direction scan, Co-60? Tl-208?
- *Priority!* Neutron direct capture, signal

# CRT

- *Priority* If we can/cheap enough, it's nice.
  - Independent t0, reconstruction handles
    - Only true track vs. reco track information (external to TPC)
      - Statistics will be low.
- Really useful for commissioning

# Laser

- *Priority* Critical system, only direct Efield x drift
  - Many different origins of E field distortions (alignment, space charge) with spatial effects
  - Useful for commissioning, diagnostic and measurement

# BACKUP

# Other calibration needs ex-situ?

- Understanding electrons of 50 MeV -10 GeV (ha ha) in protoDUNE (via beam, some other source)
  - Studies which motivate the missing energy range for us (also for radioactive sources)
- Underground test stand for radiological characterization, Ar39 spectrum
- ProtoDUNE test of flash lamp to generate electrons off mirror