2x2 Status Update

February 13, 2024

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Installation and Hardware

- **Cryostat**: undergoing leak checks
  - **By next week**: stable vacuum
  - **Potential challenge:** possible injury + on leave = (maybe) no cryo techs
- **ODH fan:** solution found, on track
- **Ongoing work:**
  - cable routing
  - all electronics racks must pass ORC checks
- NuMI beam is scheduled to turn on [?] and turn off in July [??] if the money exists [¿¿¿¿¿¿]
- **UChicago involvement:**
  - Light (Angela)
  - Purity Monitor (Elise)

Simulation and Calibration

Simulation Goal: first large-scale simulation production (1e20 POT)

- **Issues:**
  - Charge-light matching
  - Light integration w/ 4 independent modules
- **Status:** mostly solved

Calibration Goal: do anything

- **Status:** early stages, mostly kept w/in analysis groups

UChicago Involvement:

- Light noise simulation (Angela)
- Light DQM (Angela)
- Light simulation validations (Angela)
- Data/MC comparisons for calibrations (Angela and Elise)
- Low-level reconstruction for calibrations (Elise)
- Single module event display (Elise)
- Cosmics simulations (Elise)

Reconstruction and Analysis

Two “official” **reconstructions**

- **ML Reco**: integrated into production chain (imperfect)
- **Pandora:** not well-integrated (reconstruction fidelity uncertain)

Analyses use **CAF files**: infrastructure (i.e. CAFAna) **still in development**

Systematics: General plan for incorporating cross section and flux systematics into analyses exists but identification and incorporation of detector systematics is minimal

UChicago involvement:

- $\overline{\nu}_{\mu}$-Ar CC mesonless cross section (Elise)
- n-Ar cross section (Angela)

MINERvA for 2x2 Integration

- MINERvA took data last summer (2023)
- Generally seems to be ready for data-taking
- Ongoing integration of MINERvA information into main software chain
- Early stages of track-matching tests between MINERvA and 2x2
- **UChicago involvement:**
  - None