Overview of JUNO-TAO Detector
Claudio Lombardo on behalf of the JUNO collaboration

Measure reactor anti-neutrino spectrum with high resolution
- provide model-independent reference for JUNO
- benchmark to test nuclear databases
- provides increased reliability in measured isotopic antineutrino yields
- improve nuclear physics knowledge of neutron-rich isotopes
- shed light on reactor spectrum anomaly (5 MeV bump)
- searching for light sterile neutrinos with a mass $\sim$ 1 eV
- $\sim 36 \times$ JUNO statistics

TAO Design Features:
- 2.6 ton Gd-LS as target material (1 ton fiducial mass)
- Detector placed at 30 m distance from a 4.6 GW$_{th}$ reactor core
- 10 m$^2$ SiPM, HPK 4x8 arrays, with 50% PDE, Coverage: > 95%
- SiPMs and LS cooled down to -50 °C

Expected Performance:
- $\sim 4500$ p.e./MeV collected charge
- Energy Resolution: $< 2\% / \sqrt{E[MeV]}$

Calibration system
- ACU (Automated Calibration Unit), can deploy 3 different sources inside the LS: an ultraviolet (UV) light source, a $^{68}$Ge source and a combined source that contains multiple gamma sources and one neutron source
- CLS (Cable Loop System), can deploy one source off-axis

Veto & Shielding
- Top Plastic Scintillator
- Water Tank + Passive Shielding

Planned to be online in 2023