

## **POLARIS - new sparse radial detector concept for an underwater neutrino telescope**

*Monday, 25 May 2026 11:20 (20 minutes)*

We would like to present POLARIS, a new sparse radial detector concept for an underwater neutrino telescope, simulated using the Prometheus framework. The design targets multi-PeV horizontal tracks with minimal instrumentation density of around 1000 DOMs. We evaluate the astronomy potential of this design through 5-sigma point source detection flux normalization and diffuse flux limit, benchmarking against IceCube, KM3NeT ARCA, TRIDENT, TAMBO and RNO-G. Such a sparse detector concept could achieve competitive sensitivity in the PeV range, representing a compelling pathway toward PeV neutrino astronomy and a potential reference design for rescaling detectors currently in the planning phase.

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**Session Classification:** Topical Sessions

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