A Proto-Collaboration for the Terrestrial Very Long Baseline Atom Interferometer Study

Albert De Roeck – CERN + ?

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TVLBAI Proto-Collaboration?

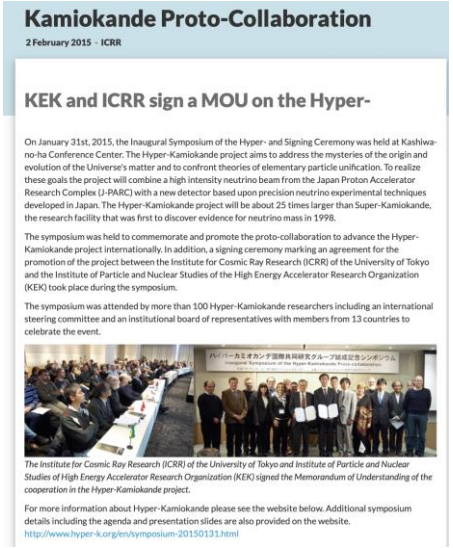
- The Terrestrial Very Long Baseline Atom Interferometer study participants represent a rich variety from different fields of expertise.
- Workshops such as this one are extremely useful to flesh out ideas and consider options for (a) large scientic project(s) of a length of 100m-1km
- To move towards a possible realization of such a huge project, it will be important to bring the study to a next level of organization.
- The formation of a proto-collaboration is proposed as a next step in the evolution of the Terrestrial Very Long Baseline Atom Interferometer study

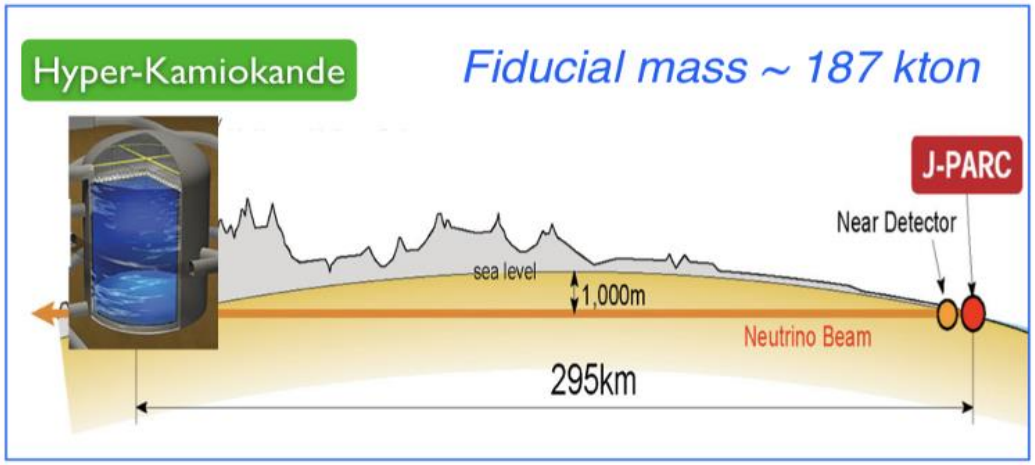
Proto-Collaboration

- Why?
- In High Energy Physics (HEP) it is a concept regularly used as a step in the evolution of a project, to help the participating groups with focus, organization and coherence towards a defined scientific goal. A proto-collaboration needs an organigram with a structure to be agreed.
- What?
- A non-legally binding agreement, a Memorandum of Understanding, is set up, which interested participants can sign in order to join the proto-collaboration. It defines the common scientific goals of the project.
- The Terrestrial Very Long Baseline Atom Interferometer study is entering a critical phase where such MOU will be very beneficial!

Recent Proto-Collaboration Examples in HEP

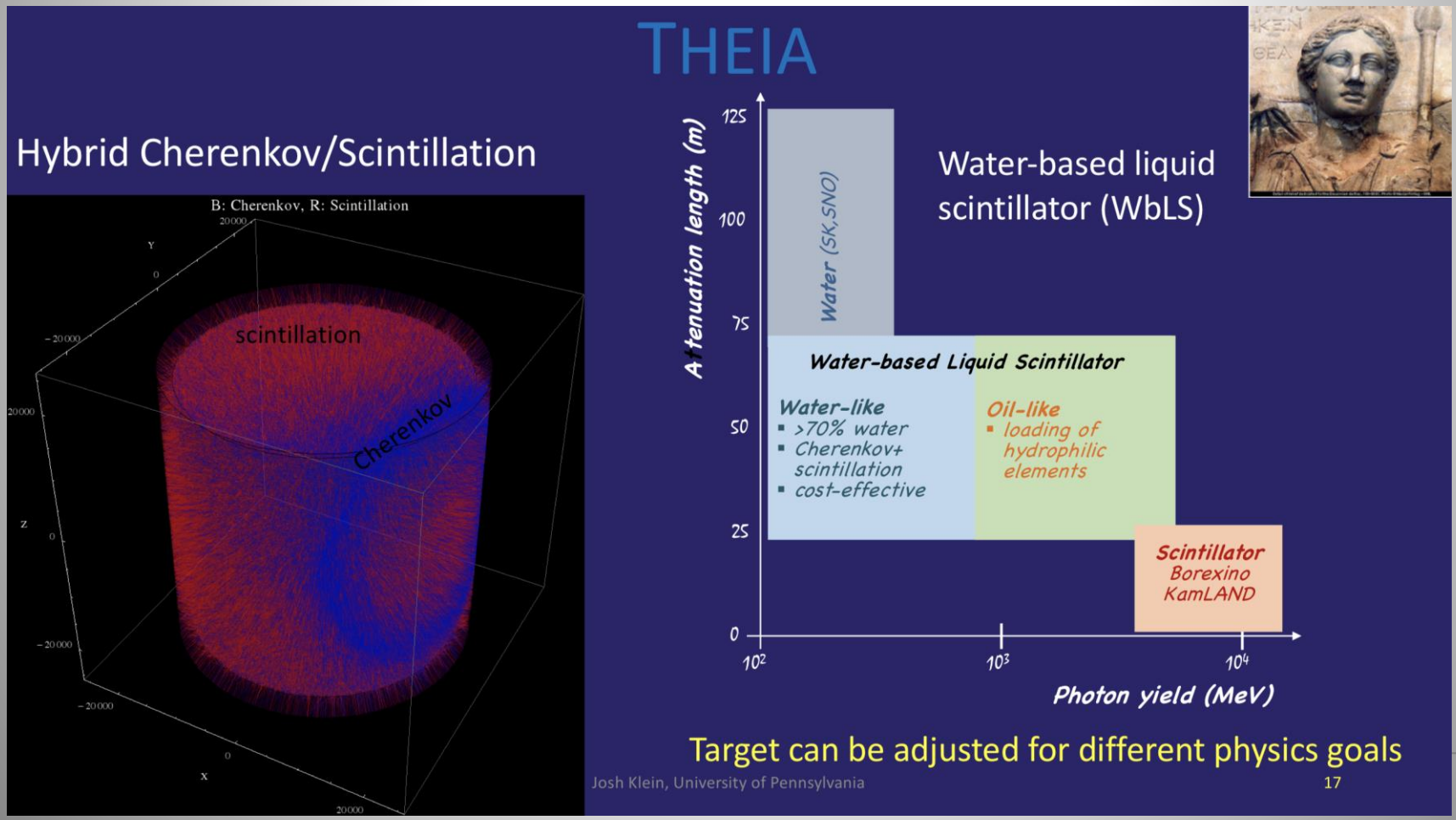
- T2HK: The Tokai to HyperKamiokande Neutrino Experiment
- Formed in 2015: signed by 73 institutes from 15 countries with ~200 members
- In 2019 this proto-collaboration turned into a full collaboration and had doubled in size by then.





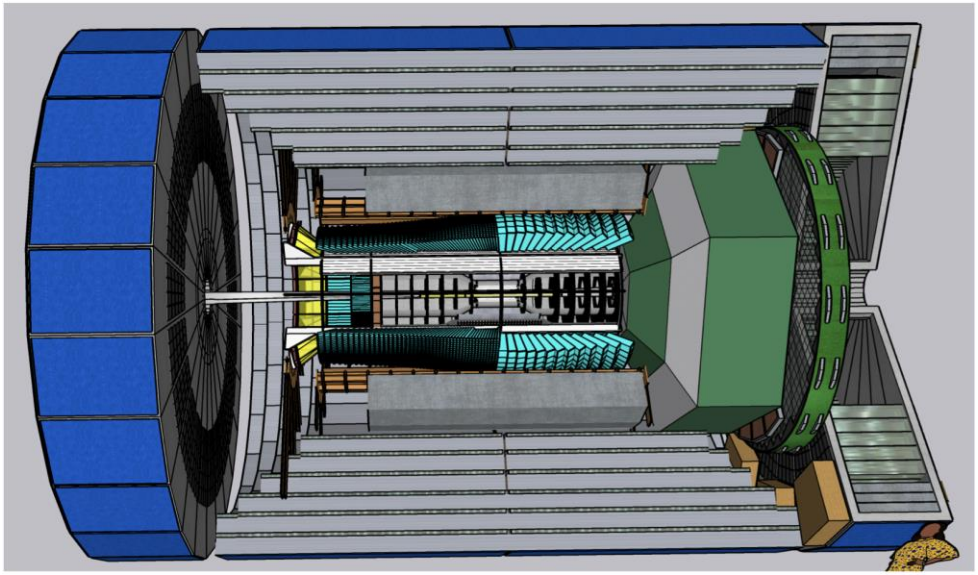
Recent Proto-Collaboration Examples in HEP

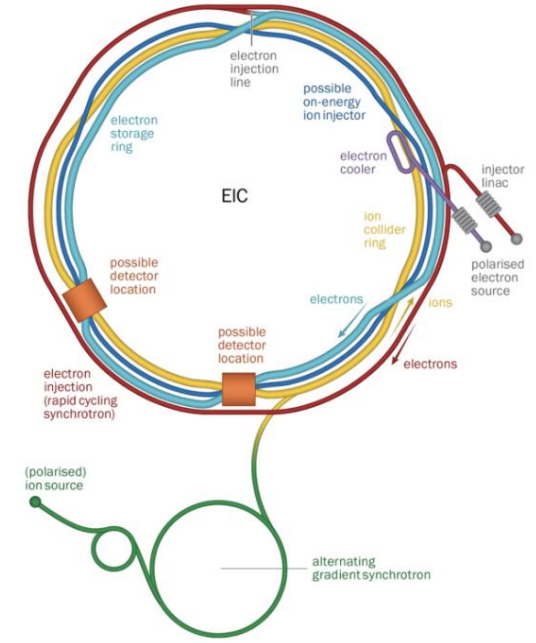
THEIA: a proto-collaboration since 2022 with 31 institutes and ~100 peop
It is an R&D project for a large detector. THEIA could become a
Stand-alone project or become a part of the DUNE neutrino experiment…



Recent Proto-Collaboration Examples in HEP

- CORE: COmpact detectoR for EIC
- Proto-collaboration formed in 2022 with 25 institutes & 60 people. CORE wil be 200 M$ experiment
- The Electron Ion Collider (EIC) is a new accelerator under contruction at BNL





- Other examples: LBNF accelerator project (2015), ILD (2008), Calorimeter detector R&D (2024), Mu3e (2012)…

Summary of examples of Proto-Collaborations

- Mu3e: successful transition to experiment
- T2HK: successful transition to experiment
- LBNF: successful transition to accelerator
- ILD: awaiting approval of ILC accelerator
- THEIA: still proto-collab, good progress in organization/design/impact
- CORE: still proto-collab, good progress in organization/design/impact
- Calorimeter detector R&D: just started

TVLBAI Proto-Collaboration!

- The TVLVAI study consists of a heathy and much needed combination of expertise from different fields.
- A PC will allow the project to focus on a common future vision and roadmap. Goal: eg a Conceptual Design Report
- It will allow to talk with one voice toward the outside world, eg now with MAGIS. Organize workshops and meetings
- It allows to set up a formal structure with eg an institutional board (IB) with representatives of all institutes, to make project decisions, and led by an elected chairperson
- It will facilitate preparing coherent funding requests for resources in future.
- Significant secured funding or approval at some level can be a trigger to proceed to full collaboration agreement
- Details on a possible MOU given by Georgio Calatroni next!