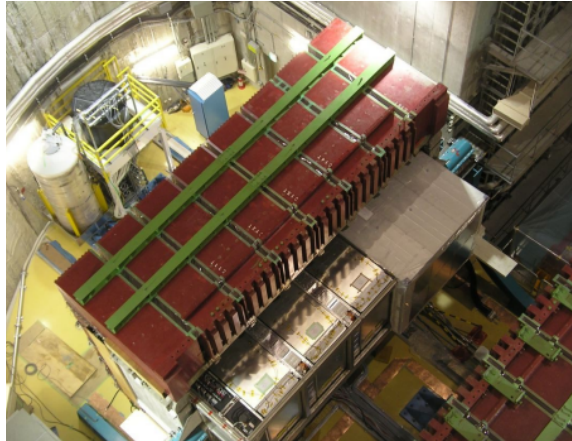
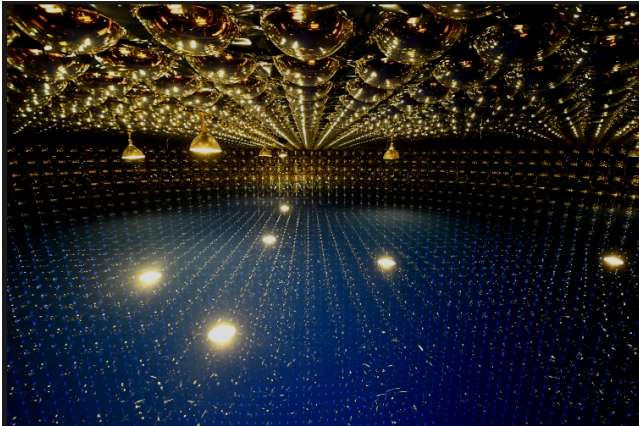


New candidate members from Italy: presentation

T2K IB, 13 November 2025



Candidate members

Paolo Maestro and **Gabriele Bigongiari** are **Associate Professors** at the **University of Siena** and members of **INFN-Pisa (a new institute in T2K)**

Their participation has already been **endorsed by INFN** and presented during the budgetary annual meeting in September



Paolo Maestro



Gabriele Bigongiari

Background and expertise

- Design, construction, testing, and operation of **space-based calorimeters**
- MC modeling of detectors, development of **reconstruction software** for tracking and particle-ID

Major astroparticle physics experiments: **CALET**, **AMS-02** on the ISS, and **CREAM** (stratospheric balloons over Antarctica)

INFN R&D programs on **Si pixel detectors** and **micro-pattern gaseous detectors**

Prof. Maestro contributed to the **CDF experiment at Fermilab**, where he played a key role in heavy-flavor physics analyses, such as studies of **D^0 meson oscillations and CP violation in charm decays**



Paolo Maestro



Gabriele Bigongiari

Planned contributions – 1st year

Activities on **HA-TPCs** in close collaboration with colleagues from Padova and CEA

- test campaign at CERN for the **FC0 prototype**, which mirrors the TPC at J-PARC
 - laser and particle beams (Sep. 2025 – mid-2026)
- Develop/refine tracking, reconstruction, and simulation SW
 - improve space, momentum and energy resolution and efficiency
- Engage in **TPC expert training program**, and contributing to **operation support** and **data-taking shifts** during the upcoming T2K run.

These initial activities are designed to provide a strong foundation for their technical integration into T2K, ensuring that their contributions are immediately valuable to the ongoing upgrade and operation of the ND280 detector.

Medium and long term commitment

We envisage a continued commitment to the **operation and maintenance of the TPC hardware**, ensuring long-term detector stability and reliability in view of the use of ND280 detectors in the HK era.



Paolo Maestro

Drawing on their expertise in detector electronics, and supported by the INFN Pisa technical resources, they are particularly interested in contributing to the **improvement of the trigger and clock distribution system**

In parallel expand toward **physics analyses within T2K**. In particular using ND280 in the **OA** and **cross-section** groups



Gabriele Bigongiari

University of Siena

The inclusion of the **University of Siena and INFN-Pisa** as a new institutional member of T2K is of significant added value.

These institutions, with their long-standing traditions of excellence in research and education, will provide robust support for the group's scientific activities.

Moreover, the establishment of a T2K group in Siena opens the door for **student participation**: several graduate students are expected to join T2K under the supervision of Profs. Maestro and Bigongiari.

Their involvement will not only expand the personnel available for detector operation and analysis but will also ensure that T2K serves as a vital training ground for the next generation of Italian and European neutrino physicists.



Paolo Maestro



Gabriele Bigongiari