

Neutrino group wish-list

1) CR CNRS position

Justification: Following the recommendations of the LPNHE and IN2P3 Scientific Councils the LPNHE-Neutrino group is currently fully involved in the Japanese neutrino program. This program consists in continuation of the **T2K** experiment (T2K-II project), where we have leading roles in the recently finalized near detector **ND280 Upgrade**, and in preparation of the **Hyper-Kamiokande** (HK) project, the experiment of the next-generation under construction in Japan. The LPNHE group is responsible for an important technical contribution within the HK experiment which is the clock generation/distribution and time synchronization system. The new CNRS CR researcher will explore first data from the upgraded ND280 at J-PARC and will lead the analyses of the T2K-II data, with the goal of reducing the systematic uncertainties in the on-going and future long-baseline experiments, which is crucial for precise determination of neutrino oscillation parameters and discovery of the CP-violation in the lepton sector. In addition, the full participation in the HK project will require to enlarge the group experience to the Cherenkov ring reconstruction in the far detector and its application to the study of solar, atmospheric and supernovae neutrinos. The new group member will play a leading role also in this longer-term activity.

2) Budget request for T2K-upgrade in 2025

We would need about **20 kEuros** for material and equipment (HA-TPC@CERN), maintenance of the upgraded ND280. About **70 kEuros** would be required for scientific trips to participate in the data-taking at J-PARC and collaboration meetings.

3) Budget request for Hyper-Kamiokande in 2025

For the HK timing system we would need about **100 kEuros** for equipment. About **80 kEuros** would be required for scientific trips to participate in the HK collaboration meetings and activities on-site as well as in the HK electronics assembly project at CERN.

We will also ask for a **CNRS postdoc grant** for T2K-II to exploit ND280-upgrade data starting from September, 2025.