

NOvA Project.

1) Goals of the experiment

The main objective of the experiment is a detailed study of neutrino oscillations. Through a comparison of neutrino and antineutrino induced reactions the experiment has sensitivity to both a possible CP violating phase in the PMNS matrix and to the neutrino mass ordering. The beam from Fermilab is sent to Minnesota about 800 km away in a so-called long baseline configuration. Of particular interest, the possibility of combining the NOvA results to those of the T2K experiment in Japan.

For the future (until 2024) the collaboration aims to achieve a 95 CL sensitivity to the mass hierarchy and exclude to a similar confidence level a non-zero CP violating phase. The experiment should not reach a full discovery sensitivity of 5 sigma for both measurements: this will be the goal of the DUNE experiment. However, it is clear that both NOvA and T2K will be the leading worldwide projects until DUNE and possibly Hyper-K will be running (>2026).

2) Contribution of the JINR group

The JINR group provided several contributions on the hardware side: electronics and liquid scintillator test benches in house, a Remote Operation Center at JINR for monitoring and shift operation, and a GRID/Cloud infrastructure for data processing.

JINR scientists are also involved in some main stream and exotics data analyses. As far as collaboration responsibilities are concerned, due to several logistics constraints, most of them included activities in house.

3) Plans

The plans for the future are rather generic and mainly include contributions to the future data taking and analysis.

4) Publications

The contribution of JINR researchers to NOvA paper is adequate with 2 out of the 6 recent papers which saw their direct contributions. Moreover, JINR people have expertise documented by papers on subject of interest for the NOvA analyses.

5) PhD theses

One PhD theses is expected for defense in 2019.

6) Talks

Only 3 out of the 12 talks presented in the list are actually referring to international conferences, and only 3/18 for the parallel sessions. This is sufficient but not excellent for a group of 24 heads (10% of the whole collaboration) and nearly 14 FTEs.

7) Group size, composition and budget

The mentioned 13.8/24 FTE over head-count ratio is acceptable, but one should aim at a higher impact of such a large group to the future operation of the experiment, mostly in relation to playing a leading role for some of the forthcoming analyses. Given the JINR group expertise, this could be *e.g.* the case of the many exotics analyses that could be proposed and carried out from the huge data statistics.

The budget (table given in Russian) appears to be sufficient to play a role as far as the future data analyses are concerned, in addition to the service work (*e.g.* related to the ROC operation and computing infrastructure support).

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