

Referee report on the project "Joint project for Direct Dark Matter search and precision study of CEvNS with new cryogenic detectors"

Project EDELWEISS/Ricochet

Dark matter and neutrinos are two of the mysteries in these days' particle physics and astrophysics. JINR group has many years successful participation in the EDELWEISS dark matter search experiment. It develops new types of the detectors, methods for suppression of backgrounds; participates in the data analysis. For the past 25 years EDELWEISS is known as one of the leading experiments for direct dark matter search with Germanium detectors. It holds unique, continuously developing technology of ultra-low temperature HPGe detectors-bolometers operated at low background environment. Recently the EDELWEISS experiment set new strong limits on dark matter in low, $1 \text{ MeV}/c^2$, mass region. This achievement becomes possible thanks to newest detectors developed by the collaboration. During the new phase of the project use of those unique detectors developed originally for direct dark matter search will be extended to precise investigation of the Coherent Elastic Neutrino-Nucleus Scattering process to search for new physics in the electroweak sector. This part of the project is named Ricochet. Both EDELWEISS and the Ricochet experiments will be conducted with huge overlap in conducted R&Ds, man power and used infrastructure. Both part of the project have aims to search for new physics and are on the edge of the modern since. Exciting results are expected in both directions: neutrino physics and direct dark matter search.

Thus the project targets the fundamental scientific tasks. The presented project is experimental one together with methodical studies. Description of aims and tasks of the project is well defined. Project's authors have essential scientific and methodological groundwork in the field. Qualification of group's members and their previous works give a strong basis to believe that the project will be successfully accomplished.

Considering that the proposed project is aimed at investigating the most interesting physics, I strongly support the project and its approval at JINR with highest priority.

A.M. Gangapshev

Head of Low background radiation laboratory
Baksan Neutrino Observatory, INR RAS
gangapsh@list.ru



28.10.2020