

**Referee report on the project:  
EDELWEISS/RICOCHET  
(Joint project for Direct Dark Matter search and precision study of CEvNS  
with new cryogenic detectors)**

Recent cosmological data indicate that about 25% of the Universe energy budget is an invisible matter which is not observed by astronomical methods and is known only due to gravity. The Standard  $\Lambda$ CDM cosmological model implies that the Dark Matter is formed of non-relativistic particles of non-baryonic nature. The nature of the Dark Matter is still not well understood. In the Standard Model of fundamental interaction there is no good candidate for Dark Matter, though in various extensions of the Standard Model there are hypothetical particles with necessary properties. Therefore Dark Matter investigations are simultaneously important tests for New physics.

Direct experimental searches of the Dark Matter particles is one the most interesting though difficult experimental tasks. The selection of the Dark Matter events requires effective methods based on variety of physical criteria. The EDELWEISS/Ricochet project, developing by DzLNP JINR in collaboration with other research centers is a continuation of the EDELWEISS scientific program. It searches for Dark Matter particles using an array of cryogenic germanium bolometers with advanced methods of data taking and analysis, as well as understanding and suppression of the background events. In its new phase the same technology and detectors will be also applied for precision measurements of coherent neutrino scattering in the region of full coherency in the Ricochet experiment with reactor neutrinos. Due to direct energy reconstruction thanks to measurement of the phonon signal possible with bolometers developed by EDELWEISS/Ricochet, the main uncertainty arising due to not well known nuclear recoil energy scale in germanium detectors will be avoided. As result the project will target search for New physics in two directions: Dark Matter direct search and from precise (1% level) study of neutrino-nucleus coherent scattering. New experimental results expected in both branches of the EDELWEISS/Ricochet project can directly and indirectly confirm or exclude some "New physics" models.

Taking into account that DzLNP JINR group has already gained experience in the problem of the Dark Matter searches and neutrino study with reactors and consists of highly qualified leading JINR scientists I would strongly support the EDELWEISS/Ricochet joint experimental programm and the team, and recommend the participation of the Institute in the project.

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30.10.2020