Review of the theme with the title: "Development of the SOLCRYS structural research laboratory at SOLARIS synchrotron" as proposed by dr. N. Kučerka from FLNP-JINR in the research area: 04 – Condensed Matter Physics; Radiation and Radiobiological Research in the frame of the Topical Plan for JINR Research for 2020–2022

The reviewed theme put forward for opening within the topical plan of JINR proposes to develop and construct an X-ray laboratory for structural research of condensed matter. According to the proposal, the laboratory will be built at existing synchrotron SOLARIS in Krakow, and it will open new possibilities to JINR scientists.

The condensed matter research is one of three pillars of the research activities at JINR, when combining investigations of researchers from the fields of theoretical, nuclear and applied physics with material researchers. The success of this comprehensive approach is continuously documented by respectable publication output of the JINR researchers, and the researchers (users) involved in the experiments performed at the facilities of JINR. One of its most utilized facility at the moment is the pulsed neutron reactor IBR-2M with its suite of neutron spectrometers. In this way it is, however, important to mention requirements for using additional methods, namely, X-ray utilizing techniques. The approach of combined and/or parallel use of neutron and X-ray scattering methods have spread considerably over last decades in the field of condensed matter research. Many of world research centers seek actively opportunities to cover both of the mentioned competencies by building the facilities in close proximity or by acquiring a direct access to them. I strongly support such initiative that is found in this new proposed theme.

The proposal outlines clearly its main activities and goals. The authors have focused obviously on fields with the longest tradition and highest demands of utilization at JINR and worldwide. The selected instruments will be operate and exploited by the experienced team of researchers with detailed understanding of scattering techniques. I evaluate very positively the level of details in parameters defining these instruments as presented in the reviewed documents. I express my encouragement to stay true to the proposed specifications to its very end.

The undoubted merit of the proposal, in addition to the X-ray instruments themselves, is a development of facilities for the sample preparation. It has become clear in many research fields that a well prepared sample represents a key part of the experimental investigation. This is especially true in the case of crystallographic samples and samples measured at extreme conditions. It is worth noting also an importance to have well trained personnel for both the sample preparation and measurement management. I would recommend to the theme leader and all its participants not to forget about the personnel issues. The proposed timeline of the SOLCRYS laboratory development looks realizable.

In summary, I can state with satisfaction that the development of X-ray structural laboratory is of a high significance to the researchers of JINR, and I strongly recommend with confidence the implementation of this theme within the framework of JINR topical plan.

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