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WP3 Detectors Subcommittee

Meeting 14.12.2020

Recommendations

The first meeting of the Detector subcommittee of the WP3 took place in December 14, 2020. At the meeting, there are all members of the subcommittee and invited specialists were introduced: Evgenyi Altynbaev, Viktor Bodnarchuk, Otilia Culicov, Vyacheslav Em, Sergey Grigoryev, Bruno Guérard, Richard Hall-Wilton, Günter Kemmerling, Gregor Nowak, Christian Schmidt, Vladimir Voronin, Anastacia Zaitseva.

All the members had expressed their willingness to help with the development of the reactor PIK infrastructure in the part of the detector development for the future instruments at the PIK's neutron beamlines.

The Detector SC members took note about the presentations of S. Grigoriev on the CREMLIN+ program and particular tasks of the WP3 group, E. Altynbaev on the program of the neutron detector development for the instruments at the reactor PIK, V. Voronin on the reactor PIK status, and V. Em and S. Grigoriev on the proposal for the development of neutron instrumentation at PIK beyond 2025.

Recommendations:

1. Since additional members were added to the detector subcommittee compared with the Cremlin project and the rather long period of time last, it would be useful to listen to a report on the point by point implementation of the recommendations issued by the previous subcommittee in the framework of the Cremlin project.
2. The SC members suppose that the efficiency of the meeting would be significantly increased if the working goals of the meeting would be communicated by the representatives of the PIK facility before the meeting. The presentations have to be coordinated inside the PIK community and

presented at the SC meeting with clear expectations of what kind of advice is expected from the SC.

3. The detectors subcommittee has been established with detector experts from different facilities who are willing to participate and give their advice in detector technologies. However, during discussions, it turned out that the mission of the subcommittee, the receiver of its advice, and the relationship to the neutron detector part in WP7 is somewhat unclear to the members. A clear statement from the organizational part of Cremlin+ would be desirable.
4. The SC members need an introduction, briefing, or guidelines on how to communicate with the colleagues at the PIK-facility to receive the information needed to help in their role as a member of the SC.
5. It is important to know all characteristics of the detector inbound with a certain instrument where it will operate. Particularly the choice of detectors at instruments has to be made with the knowledge of expected flux and count rates. It is highly recommendable to review the detector's parameters for each instrument when the parameters of the source become known.
6. Since the old detectors in PNPI are not state-of-the-art and may have already some material deficiencies, their use as additional components is certainly feasible, but it is not recommended to plan an operation with them as the main detector of an instrument.
7. From the presentation, it became known that PNPI has a group in charge of the issues related to detectors but the structure and organization of the detector group at the reactor PIK is not clear and it has to be presented. At such a large facility as the PIK reactor, it is mandatory to have a group of sufficient people with knowledge and expertise in neutron detectors. If not already done, it is recommended to build or extend the group by physicists/engineers/software engineers and technicians to perform research and provide professional support in detector technologies.
8. As the readout electronics is an integral part of detector systems, the detector group should also discuss it. Because of the long-term operation of the PIK reactor, it is recommended to select modern electronics with long availability of components. To keep the efforts for maintenance and integration into instrument control systems as low as possible, a large diversity of DAQ electronics should be avoided.