

Report on the project

Participation of JINR in the Physics Research Programme at the BEPCII/BESIII

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The BESIII experiment is focused on the studies of charmonium physics, physics of charmed mesons, τ -leptons and light hadron spectroscopy in the e^-e^+ collisions in the energy range of 2 - 4.6 GeV. The international collaboration involves about 500 members from 14 countries. The experiment is located at the e^-e^+ collider BEPCII at Institute of High Energy Physics (Beijing, China) and has been operating since 2008. BESIII is precise general-purpose detector designed for the study of high luminosity e^-e^+ collisions. The e^-e^+ beams allow doing a lot of precise tests of SM and analyses related to physics beyond SM. The list of obtained results is impressive, the BESIII Collaboration has produced about published 200 papers in total, involving the very unique and highly cited results.

The JINR team participates in the experiment from its very beginning as one of the leading software developers in the collaboration. Software development represents the main technical contribution of the JINR group to the experiment. Evidently, the group has highly qualified IT experts developing sophisticated software for the present and future needs of the experiment. The plans for further software developing are demanding, however, I believe realistic. The obtained experience can be potentially applied for proposed super charm - τ factories in Novosibirsk, Russia and in Beijing.

For effective participation in the collaboration, it is also very important to take an active part in the analyses of the data. In the last two years, the group focused on the study of problems related to the production of J/ψ particles and this topic is substantially expanded in the plans for the next years, when the data at higher energy (4GeV) will be collected. The list of intended topics is wider than before, however reasonable. For example, the various tests of perturbative and non-perturbative aspects of QCD are particularly important. Nevertheless, my impression is that the activity in the data analysis should increase with the aim to make a contribution of JINR group in the common publications clearer. Similarly, Russian speakers should be well visible in the international conferences presenting BESIII results. The experiment really offers very interesting physics, this high potential should be very effectively utilized.

At the same time, the structure of the group could be better balanced: more PhD students and fewer researches with a small FTE. However, the team leaders realize this weakness of the project, so one can expect that they will try to better optimize the structure of the team. Required financial support is not high, but for the time being is adequate.

To conclude, in view of the above arguments, I am sure that the team should continue participation in the BESIII experiment and obtain the corresponding financing.

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