

Review of the proposal „Participation of JINR in the Physics Research Programme at the BEPCII/BESIII”

The BESIII experiment at the BEPCII electron-positron collider in Beijing, China, is operating now for about 10 years at energies around the charmonium threshold. It is a worldwide unique facility providing excellent scientific results in areas like hadron spectroscopy, decays of charmed hadrons, tau physics, tests of QCD and precision tests of the Standard Model (SM). Also physics beyond the SM and research on exotic states is part of the scientific programme and recently many important results on exotic XYZ states were obtained. The proposal is about the continuation of the JINR participation in the years 2020 – 2022.

Since 2005 JINR is part of the BESIII collaboration and has provided many very significant contributions to the experiment. Examples are software development and data analysis, in particular in charmonium physics. During the last two years the JINR group worked and obtained interesting results on the following physics topics:

- Cross section measurement of light meson pairs;
- Cross section measurement of the semi-inclusive reaction $e^+e^- \rightarrow J/\Psi X$ above 4 GeV;
- Threshold enhancement in J/Ψ radiative decays to baryon/anti-baryon.

This demonstrates the important role of the JINR group in BESIII.

During 2019/20 an upgrade of the BEPCII accelerator is foreseen to increase the maximum centre-of-mass energy to 4.9 GeV and the luminosity by about 20-30%. This will further enhance the scientific potential of BESIII which will continue to be a unique place for tau-charm physics for the next years.

Another important aspect which supports the participation of JINR in this project is the realistic possibility for a Super Charm-Tau factory in Novosibirsk which is on the list of Mega-Science projects in Russia. The successful engagement in BESIII will ideally position JINR for future research at the Super Charm-Tau factory.

The resources required for the continuation of BESIII are reasonable. I want to point out that this project is certainly a very interesting topic for PhD students and I encourage the group to strengthen their efforts to attract young scientists.

In summary, I consider this project of high relevance for JINR and I strongly support the continuation of this project.

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