

Review on the proposed project
"Participation of JINR in the Physics Research Programme
at the BEPCII/BESIII " , 02-2-1123-2015/2019

In the project of the JINR physicists group, it is proposed to continue their work in the experiment BES-3 at the electron-positron collider BEPC-2. The JINR Group is going to analyze physical data and develop the methods of data analysis.

The BEPC-2 Collider is today essentially a high-performance tau-charm-factory, judging by the number of the produced charmoniums, D-mesons, and the integrated luminosity in the continuum. This area of physics is rich in surprises, such as the unexpectedly discovered states $Y(4260)$ or $X(3872)$, whose properties are still a subject of study. Quite a lot of achievements is made at BES-3. These include the most accurate mass measurement of a tau lepton, important for testing the Standard Model, the detection of charged charmoniums of type $Z(3900)$, $Z(4030)$, which may have a 4-quark structure, as well as the rise of the cross sections at the threshold of production of pairs of baryons, which indicates an intense interaction in the final state or even the existence of bound states of the baryon-antibaryon.

The group from JINR has its research sector at BES-3, in which interesting results have already been obtained. This includes both the results in physics and the important contribution to the data analysis system, which ultimately will lead to the improvement of data processing. In physics, the group was engaged in measuring hadronic cross sections near J/ψ , generating baryon-antibaryon pairs, including those in charmonium decays, and measuring inclusive cross sections of charmonium production at higher energies. It is important to continue these studies, bring them to publications based on available data and on increased statistics.

A positive point is the preparation for the PhD thesis on the topics of the work of the group. The results obtained from the implementation of the proposed project will be important for particle physics. Given the high level of participation of the group in the experiment BES-3, I find it useful to continue their support for working over the next period. The financial part of supporting the project looks adequate.

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