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REPORT on «Theory of Nuclear Systems»

The theoretical studies of nuclear structure and nuclear reactions have been undertaken with great success since years at JINR. Several times scientific theoreticla presentations have been highly appreciated by the Nuclear Physics PAC of JINR : the success of the Dubna theory group BLTP encouraged the PAC to recommend them to continue the international collaborations with physicists from Europe and abroad on original theoretical aspects of ongoing experiments. In the framework of theme 8 entitled « Theory of Nuclear Structure and Nuclear Reactions » and proposal for a new theme « Theory of Nuclear Systems ».

The nuclear theory team at BLTP has made major advances mainly in the following four Projects :
1) Nuclear Properties at the Border of Stability,
2) Low-Energy Dynamics and Nuclear System Properties,
3) Quantum Few-Body Systems,
4) Processes with Nuclei at Relativistic Energies and Extreme States of Matter.
At least three of the previous Projects to be continued within the « Theory of Nuclear Systems » will be closely connected with major experimental facilities at JINR : namely I) Factory of Super Heavy Elements and ii) ACCULINNA2 Fragment Separator. The last Project is more dedicated to the NICA facility.A large number of future theoretical studies will also be closely linked to the experimental programs of other worlwide facilities (CERN, FAIR, FRIB, HIE-ISOLDE, SPES and SPIRAL2).

Summarizing the convincing results of previous theoretical investigations at BLTP that have been very fruitfull in the past, I am glad to recognize the success of the scientific program of Theory of Nuclear Structure and Nuclear Reactions and, therefore, I strongly support the proposal for a new theme «Theory of Nuclear Systems» that appears to be very promising.

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