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इण्डियन एसोसिएशन फॉर द कल्टीवेशन ऑफ साइंस
ইণ্ডিয়ান এসোসিয়েশন ফর দি কালটিভেশন অব সায়েন্স
INDIAN ASSOCIATION FOR THE CULTIVATION OF SCIENCE

Report for project on Nanostructures and Nanomaterials

The project titled "Nanostructure and Nanomaterials" aims to study several properties of two-dimensional systems such as graphene, topological superconductors, and dichalcogenides. All these materials have been actively studied in the recent past; in this sense, the proposal is quite timely. Moreover, it aims to study quite a few aspects of these, such as the physics of Josephson junctions in such superconductors, that have not been studied in great details so far. This makes the proposal scientifically interesting. Also, the possibility of experiments on these systems in the center for applied physics in JINR as well as other laboratories of JINR member states makes such a project scientifically valuable.

Out of the several aspect of these systems that have been put forth as areas to be studied, I find the ones on Josephson nanostructures in layered materials particularly interesting. This is not only due to the fact that its one my field of interests, but also because that such a systematic endeavor has not been, to the best of knowledge, taken so far. It is well known that Josephson junctions of topological superconductors exhibit novel properties; however, their layered counterparts are much less studied. Such studies, proposed here, are likely to lead to interesting results.

Overall, it is my impression that the project is scientifically interesting not only because of the timely nature of the topics that is being covered, but also since it allows for meaningful scientific collaboration between several JINR laboratories. This is likely to lead to interesting results arising out cross talks between theorists and experimentalists.

I therefore strongly recommend the project for funding.

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