Science and Engineering Research Board
(A Statutory body of the Department of Science and Technology, Government of India)

Call for establishing inter-institutional centre to develop human resource in Particle and Accelerator Physics & Associated Technology Areas

Science and Engineering Research Board (SERB) invites proposals from interested institutions having necessary background, expertise and resources to establish Inter-Institutional Centre in Physical Sciences. The aim of the call is to invite proposals to carry out cutting edge research in particle and accelerated physics and related areas with emphasis on training manpower in this important instrument intensive field. It is expected that a pipeline of researchers required to carry out “mega science” projects being implemented jointly by Department of Science and Technology and Department of Atomic Energy, particularly, in development of detectors and other high end instruments will be generated through this effort. More details can be seen from the advertisement published in SERB website (www.serb.gov.in)

A detailed research proposal containing specific mega science program to be undertaken, expertise of the participating institutions, list of faculty members & their CVs, potential spin-off etc. be submitted before the deadline. EMR format of SERB available on the web site (downloaded from www.serb.gov.in) may be used as a guide in preparing the proposal. Five hard copies of the proposal along with a soft copy in MS Word be sent to the following address latest by March 31, 2014.

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Envelop may be super scribed “Proposal for establishing Inter-institutional centre in Physical Sciences”.

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Mega science programmes initiated in recent five year plans require both, building large facilities, involving cutting edge technology, as well as developing skilled manpower in a range of areas. While primarily these programmes are motivated by the desire of the scientific community to understand some very fundamental and deep issues of science, very often these lead to huge technological spin offs beneficial to the society. A large country like India, aspiring to be in the forefront of scientific research and technological capability, must play an active role in these frontline science programmes, many of which are international efforts in view of the high costs involved. Clearly, due to the high costs involved, it is incumbent for us to plan our activities in such a way that not only the number of researchers utilising such facilities justifies the large investments required, but concurrently, we must also keep focus on delivering commensurate benefits to the society. While the country is rightly embarking on a number of mega-science programmes, in recent times, availability of human resource, for building and utilisation of facilities in India and abroad as well as for O&M of such facilities in India, is a major constraint. Furthermore, developing multidisciplinary teams which will capitalize on the R&D activities and translate the effort into gains for the society must be upfront targeted. Timely development of human resource necessary for all the plurality of activities involved in specific mega science programmes is thus a prime necessity. Rapid expansion of number of frontline science researchers in the country as well as major enhancement of our national technological capability, as a result of such efforts would, hopefully, bring to the country adequate beneficial spin offs.

A number of such mega science programmes relate to particle and accelerator physics and related areas. Department of Atomic Energy has been in the forefront in building such facilities in the country as well as in making in kind contributions as a part of India’s participation in International collaborations in this area. This has enabled the larger Indian research community to access these
facilities for their research. Department of Atomic Energy (DAE) and Department of Science and Technology (DST) have developed a joint mode of working to support participation of Indian researchers in facilities such as LHC, FAIR, INO etc.. The Agreement between DAE and US-DOE for “Cooperation in the Area of Accelerator and Particle Detector Research and Development for Discovery Science” is also one such mega science collaboration.

A number of Indian Universities have been participating in such collaborative programmes, including as work centres for building experimental equipment like detectors etc. We reemphasize that developments in Particle Physics, Accelerator and Detector Technology not only advance our understanding of the universe, but also lead to development of modern technological capability that can play an important role in various sectors, like energy, medical diagnostics and treatments, microelectronics, communication, micro/nanotechnology based industrial applications, environment and several others. There is thus a strong case for pursuing HRD activities, with a broader perspective as above in the university domain, that are primarily focussed on specific collaborative projects in experimental research in accelerator and particle physics, but also keep an eye on larger benefits that must accrue to the society. Such HRD programme should involve teaching, research and product development in above areas with specific thrust towards the requirements of mega science projects in hand. Students entering such programmes should have wider choices in terms of being a part of the specific accelerator/detector programme or pursuing wider opportunities in the broader domain listed above.

Organising such a programme would necessitate various stake holder institutions to join hands in terms of resource persons, identification of research projects and funding support for R&D and product development. Taking above into account and to cater to expanding need for human resource in this area it is proposed to invite proposals from interested institutes to set up an inter-institutional centre that would train the human resource necessary for experimental programmes in accelerator and particle physics and allied areas drawing resources of participating institutions. The HRD activities of the centre, apart from emphasising experimental work, would also lay stress on creating necessary skills, technology and hands on experience on product development.
The write up of a proposal must clearly bring out:

(1) Specific mega science programme(s) on which the proposed inter-institution centre would concentrate;

(2) The strengths of the participating institutions in physics research areas and related technology development activities where they have strengths;

(3) The list of faculty members who would participate as well as a statement about their relevant experience and the projected activities where the students would get trained;

(4) Potential spin off programmes on which focused efforts would be launched for wider benefit to the society;

(5) Concurrently and on longer time frame, who could be possible industrial partners in the programme;

(6) The budgetary requirements, containing both capital expenses as well as recurring expenses and the five year time frame over which it will be realised;