

NuPNET: Toward a Transnational Funding Plan for Nuclear Physics in Europe

Introduction

Since its foundation more than 18 years ago, **NuPECC (Nuclear Physics European Collaboration Committee)**, an Expert Committee of the ESF (European Science Foundation), has played a crucial role in providing independent views on the direction of nuclear physics within Europe, in the form of periodic Forward Looks (Long-Range Plans). Over a number of years, NuPECC has gained the respect of the European nuclear physics community, and its authority is now recognized by the EU Commission, the national Funding Agencies and, most recently, by ESFRI (European Strategic Forum for Research Infrastructures).

In addition to science vision given by NuPECC, the EU framework (from 4th to the 7th) programs and instruments (Round table, Networks, I3, Design Study) have been adopted with considerable success by the nuclear physics community and therefore have played a decisive role in the emergence of common projects.

Today within Europe the challenge is to merge the national programs in Nuclear Physics in order to create a **stronger** and more **cohesive** research activity that is truly European in scope. The current funding procedures, where groups are funded by separate national funding agencies that reflect national priorities, have to be given a strategic direction to help align some of the national decisions to the common goals.

NuPNET-ERA-NET Proposal

Scientists who wish to collaborate on the science goals or the facility

development have to approach their separate funding bodies and through their separate efforts to generate the combined funding needed to deliver the science. These “ad-hoc” procedures are very time-consuming and their efficiency in terms of achieved cooperation schemes are certainly not optimum. Local or national approaches to *Research infrastructures and associated equipments* in the field of Nuclear Physics cannot reach the dimension of competitiveness due to the increasing complexity and overall cost related to such future developments.

What is required now is that Europe puts in place a mechanism to meet the challenge of an effective coordination of national funding procedures on the common agreed priorities for infrastructures and R&D investments. In the FP6 program, the European commission has launched a new tool—ERA-NET—dedicated to the following goals:

To step up the cooperation and coordination of national or regional research activities through networking of programs including their mutual opening and the development and implementation of joint activities.

The ERA-NET does not finance research activities as such, but the coordination of nationally funded research activities. The partnership composition allows as eligible partners legal entities such as public bodies responsible for financing or managing research activities carried out at national or regional levels and other national or regional organizations that finance or manage such research activities.

Less than 2 years ago more than 15 representatives of Nuclear Physics funding agencies and/or corresponding organizations, a NuPECC delegation, and EU officers met in Paris to discuss the opportunity to launch such an ERA-NET scheme for our field in Europe. The participants unanimously agreed to build up such an ERA-NET proposal on the basis of the scientific recommendations made by NuPECC in the last edition of its long-range plan. As such, NuPECC is considered as the Science Advisory Body of this Committee and is proposed to be an associated member of the ERA-NET.

The proposal took the name of NuPNET (for Nuclear Physics Network), and was planned to be ready for the first call of the FP7 program (under the EU FP7 program CAPACITIES) in May 2007. The scientific coordination of the proposal will be led by the French partner, and a Coordination Committee composed of members of funding agencies from France, Germany, Italy, and Spain had the responsibilities to work out the full proposal. Thanks to the excellent collaboration between the Coordination Committee and the managers of 19 European institutions who agreed to be part of this new venture, in May 2007 the NuPNET proposal was submitted in due time to the ERA-NET-FP7 first call.

In the particular field of nuclear physics, our ERA-NET proposal adopted a stepwise approach over a period of three years with the following goals:

- Goal 1:** Compare reviewing and funding systems in participating funding agencies. Provide a Census of Resources and Agents in Nuclear Physics and Infrastructures that paves the way to common decisions. Liaison with I3, DS, and other European and International initiatives (ESFRI, OCD). Integration of new associates. (Work package led by Germany)
- Goal 2:** Propose a set of joint transnational activities (based on the science priorities set in the Long-Range Plan of NuPECC) that can be launched by Funding Agencies thanks to NuPNET coordination. (Work package led by Italy)
- Goal 3:** Launch one or more of those proposed joint transnational activities in the field of Nuclear Physics Infrastructures. (Work package led by Spain)
- Goal 4:** Provide Europe with a **sustainable scheme** beyond the project duration.

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The overall coordination of the project is (Work package management) under the responsibility of the French partner. The requested budget for the 3-year period was 1.7 M€. Evaluation of our proposal took place during the summer of 2007 and by September, the NuPNET proposal was accepted and contract negotiations have been completed by March 13, 2008 (Budget granted 1.3 M€ for 3

years). The Kick-off meeting will take place on March 27 in Paris.

Embarking for a New Venture

With the help of the working program described herein, with the close relationship with NuPECC and its Long-Range Plans, which provide a clear vision for the development of the science in Europe, we believe that NuPNET, if successful, will have a major impact on European Nuclear Physics. NuPNET will provide for the first time the instruments (structure, organization, common action plan), needed to proceed toward European strategic decisions on the funding of nuclear science and related research infrastructures in Europe. The funding agencies that form NuPNET will be able to agree on multilateral approaches (“à la carte”) or truly European approaches to specific projects.

This initiative will have also an impact worldwide due to the international character of the field and the strong competition between the major research infrastructures of the leading regions of the world (Europe, North America, and Asia, connection with the OECD Global Science Forum).

As examples of possible common strategic decisions for funding we may think of the new major RI facilities for nuclear physics to be built in Europe, the new international project FAIR in Germany, as well as SPIRAL2 in France, which have recently received approval. They could strongly benefit from the NuPNET as well as in a longer term the EURISOL project.

As further examples we may think of a financial agreement to consolidate truly European existing RI like the ECT* (European Center for Nuclear

Theory) at Trento (Italy). Another important issue could be the decision on the funding scheme of the AGATA project (Advanced Gamma Tracking Array, a world-leading gamma-ray spectrometer), an instrument that will be employed in experimental campaigns at several radioactive and stable beam facilities in Europe.

In the NuPNET governing board representatives of all European Funding agencies and ministries concerned with the construction, operation, and instrumentation needed by these new ventures would be able to use tools developed for NuPNET.

In conclusion, combining an independent science vision through NuPECC, with an transnational funding plan through NuPNET, will give to our community the tools to prepare and accomplish its ambitious science goals for the next decade.



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