Swiss Institute of Particle Physics

an Association according to Swiss law

CHIPP statement concerning the future of the Nuclear Physics European Collaboration Committee (NuPECC)

April 03, 2012/KK
Approved by the CHIPP EB April 20, 2012

The Swiss National Science Foundation (email of Paul Burkhard of March 23rd, 2012) has asked CHIPP to take a position concerning the Swiss membership in NuPECC and provide input for the discussion of the SNF Research Commission on the topic in May 2012.

Summary of the CHIPP statement:

- CHIPP recommends that NuPECC should continue with its present tasks, if necessary under a new roof. The adequate representation of the scientific community is of great importance.
- CHIPP recommends Switzerland to remain in NuPECC because of many existing links and benefits and activities at the interface of nuclear and particle physics.

NuPECC's role in general:

The Nuclear Physics European Collaboration Commission, NuPECC, was founded in 1988 as an autonomous committee by directors of European national laboratories engaged with basic nuclear physics research. Since 1997 it is an associated committee of the European Science Foundation ESF. It is supported by its subscribing institutions that are usually member organisations of ESF as well. Switzerland has one member in NuPECC and the annual subscription fee per member is 5.6 kEuro. Information about NuPECC is available at www.nupecc.org.

Recently, the ESF has published a Statuary Review of the Expert Boards and Committees (available at www.esf.org under publications, dated November 23rd, 2011). The review report contains a brief, concise and up-to-date description of the mission, the operations, the performance, the achievements and the weaknesses of NuPECC. The Statuary Report on NuPECC mentions as a basic guideline: *"NuPECC has provided a valuable role for the European nuclear physics community. NuPECC's advice and strategy, as being from the community itself, must continue. It should continue to advise the various European institutions and funding agencies."* Because significant changes to ESF are expected, the Review report states among others:

- *"it is highly desired that NuPECC is converted into a new high-level strategic scientific organisation in Europe together with ScienceEurope"*;
- *"NuPECC wishes to continue its strategic and scientific work in this new organisation"*;
- *"NuPECC wishes to have direct access to, and participation in, the new organisation. NuPECC feel that direct transfer of expert advice and information to the top-level management and governance is important."*

Like NuPECC itself, CHIPP is generally of the opinion that such an expert committee, networking and representing the scientific community is highly necessary. Especially if ESF is to be discontinued it will be important to make sure – and not only for nuclear physics – that the scientific communities are heard in ScienceEurope, in case this organism is to take over the ESF's tasks. ScienceEurope (www.scienceeurope.org) has as one of its goals to "establish the scientific community as a third voice in the European Research Area, together with national government and the European Commission." However, at present it is not clear to CHIPP how ScienceEurope is going to implement this aim in its structure. Given the existing and well established links of NuPECC with ,and the acceptance in, the community, as demonstrated e.g. in the successful bottom-up process for the NuPECC Long Range

Plan 2010 (available at www.nupecc.org) or in the “Nuclear Physics News”, a magazine which is issued every 3 months and distributed worldwide, CHIPP sees it as a necessity that the tasks of NuPECC are continued. This continuation is best assured by NuPECC itself, perhaps under a new roof.

CHIPP position on the Swiss membership in NuPECC:

Taking into account the above statement regarding CHIPP’s general support of the existence of NuPECC, the remaining issue is the cost/benefit situation of the Swiss membership:
The Swiss membership fee amounts to 5.6 kEuro per annum. On the cost side, there is also the effort of the Swiss representative, presently Bernd Krusche from Basel.
As benefits for the Swiss Community, CHIPP mentions the following items:

- Despite the fact that classic nuclear spectroscopy appears to be retracting in Switzerland (SNF letter: “… da die Kernphysik-Forschung in der Schweiz kaum mehr präsent ist.”) there is a sizeable community in Switzerland with activities represented in NuPECC. It is important to note that there are a number of subfields belonging to different communities in the different European countries. Exact definitions of “Nuclear Physics”, “Particle Physics”, “High Energy Physics”, “Fundamental Physics” etc. do not really exist and vary throughout the scientific communities and funding agencies in Europe. As an example one can mention the presence of “Fundamental Interactions” in the NuPECC Long Range Plan 2010, covering also, e.g., low energy precision physics, symmetry violations, and neutrino physics, all very well established in the Swiss research landscape and within CHIPP and its roadmap. Also “Hadron Physics”, “Nuclear Astrophysics” and “Nuclear Physics Tools and Applications” (see separate bullet below), constituting Scientific Themes of the Long Range Plan, contain research areas covered in Switzerland, in experiment and/or theory, and represented also in CHIPP. As examples, we mention the involvement of the University of Basel in leading experiments in hadronic structure physics, internationally leading theory contributions to hadron physics from University of Bern and to nuclear astrophysics. It is important to maintain and even improve the networking at the European level. CHIPP is aware that some themes are predominantly dealt with in the CERN Process for updating the European Strategy for Particle Physics. However, it is of great importance to cover the interfaces between the different fields of research, even more so as they overlap to a certain extent.
- CHIPP participated in and contributed to the community efforts for the NuPECC Long Range Plan 2010 and was able by that to achieve some visibility of the Swiss research in the European context. We consider this visibility very important also for the future and also in view of possibilities and options for European funding of some of the activities with Swiss involvement.
- Within NuPECC, and also covered in its Long Range Plan, are the “Nuclear Physics Tools and Applications”, which often are synonymous for “Particle Physics and Applications” in the Swiss context. It is important to mention specific Swiss strength and activities in this field, e.g. the proton therapy at PSI, the accelerator mass spectrometry and isotope analysis capabilities at the Laboratory for Ion Beam Physics (LIP) at ETH Zürich, the development of imaging techniques for medical applications, e.g. the AxPET project of an international collaboration including ETHZ and CERN or nuclear polarization imaging MRI techniques developed at EPFL and PSI, to name a few.
- A common area of development and applications at the interface of nuclear physics and particle physics is also accelerator and detector development. As an example, LIP is a leader in the development of small accelerators for AMS, and PSI has unique developments, e.g. for proton therapy, for high power machines and for light sources, in this domain. Several Swiss university labs within CHIPP are highly active and successfully developing detector technology with various applications. One should necessarily also mention radioprotection as a common theme, for instance with detector developments, and applications in environmental or non-proliferation activities.

Conclusion:

We conclude that the list of benefits by far exceeds the costs and highly recommend to make sure that a Swiss scientific representation is continued in expert committees like NuPECC, thereby making sure that the important link between the scientific communities in Switzerland and in Europe can be maintained efficiently and beneficially.