

WG.9: The IUPAP Working Group on International Cooperation in Nuclear Physics

Anthony W. Thomas

Jefferson Lab, 12000 Jefferson Ave. Newport News VA 23606 USA

and

College of William and Mary, Williamsburg VA 23187 USA

History

Beginning in the mid-90s, C12, the IUPAP Commission on Nuclear Physics, under the Chairmanship of Erich Vogt, saw the need for a coherent effort to stimulate and foster international cooperation in our field. While it took some time for this new thrust to gain momentum, in 2003, under the Chairmanship of Shoji Nagamiya, C12 established a sub-committee on International Cooperation in Nuclear Physics, which I agreed to chair. At the last General Assembly of IUPAP in Capetown, in October 2005, this group formally became the ninth of the official Working Groups of IUPAP¹. As many will be aware, WG.1 is ICFA, the International Committee on Future Accelerators, which plays such an important role in particle physics.

The membership of WG.9 was chosen to have the broad representation across nations and geographical regions that one would expect from IUPAP. It also includes representatives of most of the major nuclear physics laboratories, as well as the Chairs and past-Chairs of C12, NuPECC and NSAC. The current membership is:

- A. W. Thomas (Jefferson Laboratory, USA) **Chair**
- W. T. H. van Oers (U.Manitoba, Canada) **Secretary**
- S. H. Aronson (BNL, USA)
- R. F. Casten (Former NSAC Chair, Yale U., USA)
- S. Gales (GANIL, France)
- M. N. Harakeh (Former NuPECC Chair, U. Groningen, The Netherlands)
- W.F. Henning (Chair of C12, ANL, USA)
- A. Lepine-Szily (Universidade de Sao Paulo, Brazil)
- V. A. Matveev (INR, Moscow, Russia)
- D.-P. Min (Seoul National university, S. Korea)
- T. Motobayashi (RIKEN, Japan)
- S. Nagamiya (J-PARC, Japan)
- J.-M. Poutissou (TRIUMF, Canada)
- H. Stoecker (GSI, Germany)
- Wenlong Zhan (Lanzhou, China)

The committee meets annually, at the same place as, and the day before, the annual general meeting (AGM) of C12. Members of C12 are encouraged to attend and participate fully in all meetings of WG.9. Meetings other than the AGM are held when needed to meet a particular deadline.

Initial Tasks

The first task that WG.9 set for itself was to answer the questions:

- What is international nuclear physics?
- What are the facilities that are used to investigate phenomena in nuclear physics?

- What are the scientific questions that these facilities are addressing?

The answers are set out in **IUPAP Report no.~41**, which was published early in 2007. It is a document of almost 300 pages which contains entries from all the user facilities worldwide that agreed to submit data. It also has a brief review (less than 20 pages), prepared by the committee members, of the major scientific questions facing fundamental nuclear physics, a summary of how these questions are being addressed by current facilities or how they will be addressed by future, planned facilities. There is finally a short summary of the benefits that society has received as a result of discoveries made in nuclear physics. This document has been widely distributed, for example, more than 500 copies were distributed at INPC2007. Further copies will be made available at important future meetings until no copies remain. In addition, it is available in electronic form through the WG.9 web page¹ and this electronic version will be updated every two years, with the next update beginning in January 2009.

The second task which WG.9 agreed to take on arises from a request from the United States to the OECD Global Science Forum (GSF) late in 2005 that it establish a GSF Working Group in nuclear physics. The purpose of that Working Group was to prepare a “landscape” for nuclear physics worldwide for the next 10-15 years. In particular, it is clear that policy makers in many countries now expect to understand how proposals for future facilities fit within an international context. WG.9 was asked and agreed to provide expert advice to this group and Profs. van Oers and Henning served with me as members of the GSF Working Group.

The work of the GSF was completed in March 2008 with the final version of the report being accepted by the Global Science Forum. The IUPAP Report certainly provided a great deal of valuable input, with the analysis and data provided there helping to guide the deliberations of the GSF Working group. Copies of the final OECD GSF report, which sets out a global roadmap for nuclear physics for the next decade, in a format suitable for administrators of science, should be available from the OECD very soon.

Future Tasks

The members of WG.9 have agreed that there are a number of important issues that needed to be addressed at the international level and sub-committees have been formed to tackle each of these:

- A committee was formed to prepare a concise report on what is really required to operate an effective, truly international user facility. The task is not only to address the issues of free access according to IUPAP guidelines, but to also address the particular challenges faced by users from smaller countries. The initial members of this committee are Profs. Lepine-Szily (Chair), Henning, Motobayashi and Poutissou.
- In order to achieve its goals WG.9 needs funds to support what are essentially networking activities. Inspired by the success of EEC funding for scientific networks, a sub-committee (initially involving Profs. Henning (Chair), Thomas and Tribble) was established to develop sources of funding for this purpose.
- Given recent experience, where individual countries or regions have experienced difficulties in fully funding the rather large facilities demanded by modern nuclear science, it was decided that in (initially) two areas it might be helpful to form sub-committees to explore what might be done in specific areas if those constraints could be removed.
 - For nuclear structure Profs.~Casten, Fulton and Gales agreed to establish a sub-committee.
 - For electron-ion colliders Profs.~Aronson and Thomas agreed to establish a subcommittee.

In both cases, the initial members are free, indeed expected, to recruit additional expertise as required.

The members of WG.9 have also agreed to review the final GSF Working Group report and where feasible take action to ensure that its recommendations are implemented. This is particularly interesting because some of the recommendations of the OECD GSF Report suggest a potentially enhanced role for international cooperation, for the scientific community *and* for funding agencies. WG.9 is specifically asked to coordinate the formulation of an international roadmap for nuclear physics on a regular basis, in cooperation with national and regional organizations, such as NuPECC and NSAC. In this context, it is especially noteworthy that at the last AGM of WG.9 the Asian representatives began serious discussions aimed at establishing an Asian organization along the lines of NuPECC. There was also some indication of interest in a similar initiative in South America. These developments in international cooperation amongst scientists would complement the parallel recommendations for consultations amongst funding agencies, found in the OECD Report, and may have important long term benefits for our field.

Concluding remarks

In just a couple of years this long awaited initiative in international cooperation has achieved a great deal. From the brief outline of the immediate aims it is clear that there is much to be done. This group has been created to serve the international nuclear physics community and any member of the community should feel free to contact the members of the Working Group with suggestions or advice or offers to help.

References

1. IUPAP web page for WG.9: <http://www.iupap.org/wg/icnp.html>