

IUPAP Working Group 9: Report to IUPAP General Assembly

September 2021

Mandate of the IUPAP Working Group 9:

1. Provide a description of the landscape of key issues in Nuclear Science research sequentially for the next 10 to 20 years (IUPAP Report 41).
2. Produce and maintain a compendium of facilities existing or under development worldwide (IUPAP Report 41 and Addendum).
3. Establish a mapping of these facilities on to the scientific questions identified above.
4. Indicate the missing components that would have to be developed to provide an optimized, comprehensive network of international facilities.
5. Explore mechanisms and opportunities for enhancing international collaboration in nuclear science (the establishment of ANPhA [Asia Nuclear Physics Association] and ALAFNA [Asociacion Latina Americana de Fisica Nuclear y Aplicaciones] with a nascent similar effort for Africa).
6. Identify the R/D projects that could benefit from an international joint enterprise.
7. Serve as a source of expert advise to governmental and intergovernmental organizations in connection with efforts to coordinate and promote nuclear science at the international level (the OECD Global Science Forum Working Group on Nuclear Physics [2006-2008]).
8. Serve as a forum for the discussion of future directions of nuclear science in the broadest sense (the IUPAP Nuclear Science Symposia).
9. Document the cross disciplinary impact of Nuclear Physics with its Nuclear Science Facilities and identify mechanisms for expanding (fostering) cross disciplinary research.

The rationale for IUPAP's Working Group 9 [International Collaboration in Nuclear Physics] is further described on its website :

<http://www.triumf.info/hosted/iupap/icnp/index.html>

IUPAP WG.9 Membership

The membership of IUPAP WG.9 consists of an Executive (Chair, Past-Chair, and Executive-Secretary), the directors of the major nuclear science laboratories and deep-underground science facilities around the world (five from Asia, five from Europe, five from North-America, and one from South-Africa, the chairs and past-chairs of the long range planning organizations (including ALAFNA, ANPhA, NSAC, and NuPECC). The chair of IUPAP's Commission on Nuclear Physics (C12) is an ex-officio member of IUPAP WG.9.

As of July 1, 2021, the membership of IUPAP WG.9 is as follows:

Angela Bracco, University of Milano and INFN-Milano, Italy - Chair

Robert E. Tribble, Brookhaven National Laboratory, USA, - Past-Chair

Willem T. H. van Oers, TRIUMF, Canada - Executive-Secretary

Navin Alahari, Director Ganil, France

Faical Azaiez, Director iThemba Laboratories, South Africa

Fabio Bossi, Director Laboratori Nazionali di Frascati, Italy

Gail Dodge, Chair NSAC, Old Dominion University, USA

Claes Fahlander, Chair IUPAP C12, Lunds Universitet, Sweden

Sean John Freeman, CERN, Geneva (representing ISOLDE for CERN management)

Haiyan Gao, Associate-Director Brookhaven National Laboratory (BNL), USA

Paolo Giubellino, Scientific-Director, FAIR/GSI, Germany

Thomas Glasmacher, Director Facility for Rare-Isotope Beams (FRIB), USA

Jeter C. Hall, Director SNOLAB, Canada (representing Deep Underground Research Facilities)

Stuart Henderson, Director Jefferson Laboratory, USA

David W. Hertzog, Past-Chair NSAC, University of Washington, USA

Kwon Young Kwan, Director RISP/IBS, Korea

Alinka Lepine-Szily, Co-Chair ALAFNA, Universidade de Sao Paulo, Brazil

Marek Lewitowicz, Chair NuPECC, GANIL, France

Weiping Liu, Chair of ANPhA, China Institute of Atomic Energy (CIAE), Beijing, China

Avinash C. Pandey, Director Inter-University Accelerator Centre, India

Naohito Saito, Director Institute of Particle and Nuclear Studies (IPNS), KEK, Japan

Nigel J. T. Smith, Director TRIUMF, Canada

Kazuhiro Tanaka, Past-Chair ANPhA, KEK, Japan

Grigory V. Trubnikov, Director JINR-Dubna, Russian Federation

Hushan Xu, Director IMP-Lanzhou, China

Nuclear Science Symposia

The Nuclear Science Symposia are held every other year upon the request of representatives of the Funding Agencies and stretch over two days. These are followed by the IUPAP WG.9 Annual General Meeting (AGM) and sequentially by the AGM of the IUPAP Commission on Nuclear Physics (C12). The 2019 Nuclear Science Symposium was held at the University of Notre Dame London Global Gateway, London, UK, August 2-3. These symposia provide a summary of the current leading nuclear science and the nuclear science objectives requiring new major initiatives in terms of experimentation and facilities. Overviews of the current forefront nuclear science being addressed or intended to be addressed together with the upgrading of current facilities and planned large new facilities were given by representatives from Asia, Europe, North-America, and South-Africa. The scientific program and presentation records of the 2019 Nuclear Science Symposium are found at:

[-http://www.triumf.info/hosted/iupap/icnp/index.html](http://www.triumf.info/hosted/iupap/icnp/index.html)

The 2019 Nuclear Science Symposium had arrangements for Funding Agency Representatives to participate in the discussions and to meet separately “in-Camera”. The report of the “in-Camera” meetings was given by its Chair Timothy J. Hallman, Associate Director of the Office of Science for Nuclear Physics at DoE. For details see the minutes of the IUPAP WG.9 AGM at the University of Notre Dame London Global Gateway, as well as the IUPAP WG.9 report to the IUPAP C&CC meeting, October 2019, at the above given website.

The subsequent Nuclear Science Symposium was to take place in 2021. However, not able to meet in 2020 due to the travel restrictions imposed in part by the Coronavirus Pandemic, the next Nuclear Science Symposium is currently scheduled for June 14-15, 2022, at Southeastern Universities Research Association (SURA) Headquarters, in Washington, DC. Details are given in the report to the IUPAP C&CC meeting, October 2020. The Nuclear Science Symposia need to function as 'in-person' gatherings.

Annual General Meetings

The yearly meetings of IUPAP WG.9 were held in conjunction with the IUPAP C12 meetings (i.e. at the Academia delle Scienze, Bologna, Italy, on September 7-8, 2018; at the University of Notre Dame London Global Gateway, London, UK, on August 3, 2019). The 2020 AGM was scheduled to take place at the Southeastern Universities Research Association (SURA) Headquarters, Washington, DC, on June 18-19, 2020, but needed to be postponed due to the Coronavirus Pandemic. Unfortunately the 2021 AGM could only proceed as a virtual meeting. The later AGM had in addition a series of five invited talks which were considered to be complementary to the nuclear science discussed at the 2019 nuclear science symposium. ["Advent of the Electron-Ion Collider" , "Machine Learning and Nuclear Physics" , "The Quest for the Super-Heavy Elements" , "Accelerator Driven Systems for Nuclear Reactors" , "Nuclear Physics and Nuclear Medicine"]. The agendas of all three AGM's as well as the records of the presentations made at these meetings can be found at the above listed website.

IUPAP Report 41

One of the mandates given to IUPAP WG.9 is to provide a compilation of the nuclear science and underground research facility characteristics and statistics. The original publication, IUPAP Report 41, was compiled under the first Chair of IUPAP WG.9, Anthony W. Thomas of the University of Adelaide. Since its first release in 2010, it has been updated in its electronic version (on the above website) in 2013 and following the 2017 Nuclear Science Symposium in September/October 2018 with an addendum on the underground science facilities. Since then minor revisions have been implemented but a further more involved revision is highly desirable.

Willem T. H. van Oers

Executive Secretary of IUPAP WG.9

TRIUMF, September 1, 2021