

Report to C&CC Meeting, October, 2020

Following the IUPAP WG.9 Nuclear Science Symposium at the University of Notre Dame London Global Gateway, 1-4 Suffolk Street, SW1Y 4HG, London, UK. August 2-3, 2019, it was suggested that there should be an extension of certain topics discussed as well as further topics to be considered of current interest at the 2020 Annual General Meeting, to be held at South-Eastern Universities Research Association (SURA) Headquarters at 1201 New York Ave, NW, Washington, DC, 20005. June 19-20., 2020. The proposed agenda is given on the IUPAP WG.9 website: Unfortunately, the increasing restrictions on travel and the ensuing quarantine imposed related to the Coronavirus Pandemic made it necessary to postpone the AGM to 2021, June 10-11, again at SURA Headquarters in Washington, DC. It was concluded that an in-person meeting is to be preferred. However non-abatement of the Pandemic may make it necessary to arrange for an on-line conducting of the AGM.

Membership: Prior to the 2019 Nuclear Science Symposium Robert E. Tribble (BNL) indicated to be wishing to step down serving as the second Chair of IUPAP WG.9 since 2012 (the first Chair was Anthony W. Thomas, University of Adelaide, 2003-2011). At that meeting IUPAP WG.9 unanimously asked for Angela Bracco, a long time member of IUPAP WG.9, to take on the Chair position as of January 1, 2020 and Robert E. Tribble will then be the Past-Chair. Also the current Executive Secretary, having served IUPAP WG.9 since its official formation in 2003, indicated to wish to relinquish his position at the time of the next AGM. Jens Dilling from TRIUMF has been proposed to take on the position of Executive Secretary and has stated to be willing to serve. As of August 1, 2020, Pierluigi Campana has stepped down as the Director of INFN-Frascati and has been replaced by Fabio Bossi becoming a member of IUPAP WG.9. The current membership of IUPAP WG.9 can be found at “ www.triumf.info/hosted/iupap/icnp/index.html ”

International Cooperation in Nuclear Physics: IUPAP WG.9 has initiated early on the establishment of the ‘Asia Nuclear Physics Association (ANPhA). The Chair and Past Chair of ANPhA are members of IUPAP WG.9. Many collaborations in the areas of nuclear and particle physics have been established worldwide. IUPAP WG.9 has also given encouragement to the formation of the Asociacion Latino-Americana de Fisica Nuclear (ALAFNA), its Co-Chair is a member of IUPAP WG.9. There are an increasing number of collaborations from South-America with laboratories in the rest of the world. There is currently a nascent enterprise to establish a collaboration in Africa of nuclear physics institutes.

The major Nuclear Physics Facilities: Foremost in perspective is the Electron-Ion Collider (EIC) to be constructed at Brookhaven National Laboratory (BNL) in Upton, Long Island, NY, as a joint venture with Thomas Jefferson National Accelerator Laboratory (TJNAF) of Newport News, VA. Its main objective is to determine the structure of the nucleon, the tomography of the constituent quarks and gluons, their momentum distributions, the appearance of its mass and

its spin. The year 2022 will bring the completion of the Facility for Rare Isotope Beams (FRIB) at Michigan State University, East-Lansing, MI. Its goal is to elucidate the landscape of stable and unstable nuclei with the intricate nuclear structure as originated in the evolution of stars in close and far galaxies (e.g. neutron stars and their collisions). What is the limit of existence of nuclear matter? Very similar in its objectives is GANIL in Caen, France, with its SPIRAL-2 coming on-line and the Radioactive Isotope Beam Factory (RIBF) at the RIKEN Nishina Center for Accelerator Based Science in Wako-shi, Saitama, Japan, But there is also the Facility for Antiproton and Ion Research (FAIR) at GSI, in Darmstadt, Germany, with its four experimental research directions : in 'atomic and plasma physics', in 'compressed baryonic matter', in 'nuclear structure and nuclear astrophysics', and in 'physics with energetic antiprotons'. There are other more regional nuclear physics facilities close to realization ; the Nucletron at the Joint Institute for Nuclear Research (JINR) in Dubna, Russia, and SPES at INFN-Legnaro, Italy, and ARIEL at TRIUMF, Vancouver, BC. In addition mention needs to be made of J-PARC in Tokai, Japan, with the generation of an intense muon-neutrino beam (with T2K, Super-T2K, and hyper-T2K experiments) to determine neutrino CP violation which may explain the preponderance of matter over antimatter in this universe (similar in outlook to FNAL's proton accelerator with DUNE).

The Nuclear Science Community together with the various Funding Agencies have been arranging for a substantial suite of state-of-the-art facilities which will allow addressing the current open questions in nuclear science elaborated at the two last IUPAP WG.9 Nuclear Science Symposia : at the RIKEN Tokyo Office, Tokyo, Japan, on August 29-30, 2017, and at the University of Notre Dame London Global Gateway, London, UK, on August 2-3, 2019. The various presentations at these Nuclear Science Symposia can be examined by going to : www.triumf.info/hosted/iupap/icnp/index.html

Willem T. H. van Oers

Executive Secretary of IUPAP WG.9

TRIUMF, October 1, 2020