



International Nuclear Physics Conference, INPC2013

Florence, 2-7 June 2013

INPC is the main world conference in the field and takes place every three years, with the support of the IUPAP (International Union for Pure and Applied Physics).

The 25th edition (INPC2013) (<http://www.inpc2013.it>) was held in Florence from June 2 to 7, 2013, under the High Patronage of the President of the Italian Republic. Chairman and co-chairman were C. Signorini (Padua) and P.A. Mandò (Florence); A. Bracco (Milan) chaired the Programme Committee, co-chaired by A. Olmi (Florence). A substantial contribution to the organisation was given by the INFN and support was also provided by the Universities of Florence, Milan and Padua, and by several sponsors.

The 730 participants came from 54 different countries. Special efforts were devoted to attracting graduate students by offering reduced fees; full fee waiver plus coverage of living expenses was offered to 50 selected students. More than 100 abstracts presented by students were accepted for poster presentation, and 33 were selected for oral contributions. Prizes were awarded to the two best oral presentations and to the top five poster presentations.

The Conference consisted in morning plenary sessions with 33 invited talks, and afternoon parallel sessions, with 88 invited and 218 contributed talks. About 400 posters were on display for the entire period of the Conference. A public lecture was given on the evening of June 2, addressing the applications of Nuclear Physics techniques to environmental problems and Cultural Heritage performed at INFN-LABEC, Florence.

A wide spectrum of topics was covered: Nuclear structure and Nuclear reactions; Hot and Dense nuclear matter; Fundamental symmetries and interactions in nuclei; Hadron structure and Hadrons in nuclei; Nuclear astrophysics; Neutrinos and nuclei; Nuclear physics-based applications; New facilities and instrumentation.

In the plenary sessions the invited speakers (including many young scientists) highlighted the recent theoretical and experimental achievements in the different fields. For both content and clarity, their presentations were very successful in transmitting the main physics messages to a very mixed audience.

Attendance at the parallel sessions and their quality were also impressive. A significant number of invited and contributed talks were given by students or young researchers, proving the interest and determination of the new generation to contribute to the progress of Nuclear Physics through experiments, theory, and associated technology and applications. The atmosphere was always very lively; the talks triggered discussions and fostered collaborations among the participants.

Apropos nuclear structure, the highlights concerned the search for new magic numbers, for superheavy elements, for collective modes and new shapes, and for loosely-bound light nuclei. Many experimental results benefitted from the progress made on traps and laser techniques and on reaction and spectroscopy techniques (gamma-ray detection arrays are presently a key tool). Theory is also making successful efforts to provide new predictions in the field. Nuclear reactions have been emphasized as essential tools for addressing nuclear structure questions too, besides learning about more global properties and on the nuclear equation of state.

Nuclear astrophysics is presently blooming thanks to the availability of radioactive beams. The plans for major and smaller radioactive beam facilities were discussed, promising a very exciting future. Measurements on the stellar energy production continue at dedicated low-energy accelerators.

Progress on the structure of nucleons, its tomography and on meson production is also remarkable. New measurements provide the necessary stringent tests of QCD in the nonperturbative regime; the efforts in this direction (JLAB with 12 GeV beams, FAIR and the Electron-Ion collider project) are important to learn about the strong force with the requisite detail.

Concerning the properties of hadrons in nuclei, important results were presented on strangeness as produced with different probes including heavy ion collisions. JPARC is scheduled to make a major step in this direction in the near future.

Highlights in the field of Hot and Dense QCD were presented, with the very recent results of ALICE at the LHC. The comparison with RHIC results was discussed, together with the major theoretical developments.

For the study of weak interactions, selected topics concentrated on neutrino physics, neutrino interaction and beta decay related to the test of the CKM Unitarity matrix.

Among the works on fundamental interactions, worthy of mention is the measurement of the neutron electric dipole moment using Nuclear Physics methods, providing a stringent test of the Standard Model.

The talks on applications and new instrumentation were also extremely interesting. Among others, a new facility that will play an important role in applications in the future is ELI_NP (ESFRI facility in Bucharest).

In general, we got a very positive impression about the field being very vital, healthy and dynamic; it was clear that many young people are working eagerly and enthusiastically and are important actors in new experiments and in the development of facilities, as well as in the field of theory.