
THE NATIONAL INSTITUTE OF PHYSICS

The President of the Republic of the Philippines established the National Institute of Physics (NIP) in 1983 with Executive Order 889. It became operational as an Institute upon the approval by the University of the Philippines (UP) Board of Regents on 26 May 1983. The NIP evolved from the Department of Physics of the former College of Arts and Sciences, UP Diliman, Quezon City. Its aim, as embodied in its Charter, is to become a national center of excellence in the education, training, advanced research and development in the area of physics and technology. In 1997, the NIP was accredited by the Philippine Commission for Higher Education as a Center of Excellence in physics in recognition of its status as the premiere institute for tertiary physics education in the Philippines.

The NIP offers degree programs in B.S. Physics, B.S. Applied Physics, M.S. and Ph.D. in Physics. In cooperation with other UP units, it also offers M.S. and Ph.D. degrees in Environmental Science and Material Science and Engineering (MSE).

RESEARCH GROUPS

CONDENSED MATTER PHYSICS GROUP

Program Coordinator: Elmer S. Estacio, Ph.D.

The Condensed Matter Physics Laboratory is equipped with growth facilities for either liquid phase epitaxy or molecular beam epitaxy as well as various setups for structural (X-ray diffraction, scanning electron microscope), optical (photoluminescence, ellipsometry, Raman), electrical (current-voltage, hall, resistivity, deep level transient spectroscopy) and magnetic (AC susceptibility) characterization.

Research Areas: growth, physical properties and applications of high temperature superconductors; electronic and optical properties of III-V semiconductors in bulk, quantum wells and dots; and opto-electronic devices; nano materials & solar cells; ultrafast & terahertz spectroscopy

INSTRUMENTATION PHYSICS GROUP

Program Coordinator: Maricor N. Soriano, Ph.D.

The Instrumentation Physics Group leads in multidisciplinary research involving optics and computational physics. Current work includes development of advanced optical techniques for bio-medicine and materials science, photonic fabrication and manipulation of microstructures, modeling crowd dynamics and complex networks.

Research Areas: laser microscopy; optical trapping and fabrication; complex systems; noise-aided image and signal analysis; granular materials and image and video analysis.

PHOTONICS RESEARCH GROUP

Program Coordinator: Percival F. Almoro, Ph.D.

The Photonics Research Group was established at the NIP to serve as the Philippine center for research, development and advanced manpower training in the area of lasers and laser applications. It was tasked to spearhead the development of high-impact laser physics research capabilities in the country.

Research Areas: coherent metrology: digital holography, speckle interferometry, shearography, and phase retrieval; laser produced plasma; pulse laser deposition; diagnostic and spectroscopy

PLASMA PHYSICS GROUP

Program Coordinator: Henry J. Ramos, Ph.D.

Plasma technology has become one of the major and important technologies in the development of materials. In the late 1980's, the Plasma Physics Laboratory (PPL) was established to experiment with and develop plasma systems/devices for instrumentation and methodologies in order to acquire new and practical knowledge and train skilled manpower to better employ technologies based on employ technologies based on plasma physics. With grants extended by various agencies, the PPL has built nine major plasma devices over the years. These facilities have undergone modifications and upgrading to serve as demonstration-of-principle devices for specific applications. It continues to experiment on ion sources (volume, surface, multi-cusp, gas discharge and microwave) for the production of hydrogen, helium, oxygen, other gas and metal ions and their use in the synthesis of high grade thin films of nitrides, oxides and carbides. Studies are done as well on beam transport, diagnostics development (optical emission, Langmuir and ExB probes, electrostatic energy and mass analyzers) and plasma dynamics particularly on enhancement of ion current density, ion energy, beam focusing and acceleration. These are done via simulation and compared with actual experimental results. The various studies done on these facilities generated several publications in ISI accredited journals, local journals, local and international conference proceedings and a patent for a developed process technology for coating hard films.

STRUCTURE AND DYNAMICS GROUP

Program Coordinator: Dr. Francis Norman C. Paraan

The Structure and Dynamics Group (SanD) trains students to do research using numerical modeling to solve a wide range of problems in computational physics and solid state physics. SanD focuses on the basic physics principles of

how a system's structure affects its dynamical behavior. For instance, in solid state physics, SanD investigates effects of spin-orbit coupling and disorder in two-dimensional electron systems and spin fluctuations in magnetic lattices. Computational physics problems include spatio-temporal modeling, population dynamics, percolation, malware epidemiology and search optimization in quantum computing.

THEORETICAL PHYSICS GROUP

Program Coordinator: Eric A. Galapon, Ph.D.

The NIP Fields and Particles Group conducts research on quantum field and gauge theories; quantum field theoretical methods in high-Tc superconductivity; perturbation formalism; general relativity and applications in astrophysics; special methods in non-equilibrium statistical physics and applications to non-linear phenomena in hydrodynamics and plasma physics. The Group's research interest also includes high energy particle phenomenology and foundations of non-relativistic quantum mechanics

PERSONNEL

PROFESSORS (6)

- o Jose A. Magpantay, Ph.D. (Quantum Field Theory)
- o Henry J. Ramos, Ph.D. (Plasma Physics)
- o Caesar A. Saloma Ph.D. (Photonics, Microscopy, Signal Processing & Complex Systems)
- o Arnel A. Salvador, Ph.D. (Condensed Matter Physics)
- o Roland V. Sarmago, Ph.D. (Condensed Matter Physics)
- o Maricor N. Soriano, Ph.D. (Color, Video & Image Processing)

ASSOCIATE PROFESSORS (12)

- o Percival F. Almoro, Ph.D. (Optics & Coherent Metrology)
- o Ronald S. Banzon, Ph.D. (Computational Physics)
- o Luis Ma. T. Bo-ot, Ph.D. (Statistical Mechanics & Theoretical Plasma Physics)
- o Jose Perico H. Esguerra, Ph.D. (Mathematical and Statistical Mechanics)
- o Elmer S. Estacio, Ph.D. (Condensed Matter Physics)

- o Eric A. Galapon, Ph.D.
(Quantum Mechanics and Mathematical Physics)
- o Wilson O. Garcia, Ph.D.
(Photonics)
- o May T. Lim, Ph.D.
(Complex Systems and Statistical Physics)
- o Caesar P. Palisoc, Ph.D.
(Particle Physics)
- o Armando S. Somintac, Ph.D.
(Condensed Matter Physics)
- o Giovanni A. Tapang, Ph.D.
(Complex Systems, Spatial Synchronization)
- o Cristine DLR Villagonzalo, Dr. rer. nat.
(Theoretical Solid State Physics)

ASSISTANT PROFESSORS (5)

- o Christian M. Alis, Ph.D.
(Complex Systems)
- o Johnrob Y. Bantang, Ph.D.
(Complex Systems)
- o Rene C. Batac, Ph.D.
(Complex Systems)
- o Roland Christopher F. Caballar, Ph.D.
(Theoretical Atomic & Molecular Physics)
- o Francis Norman C. Paraan, Ph.D.
(Stochastic Processes, Entanglement & 1-D Models)

INSTRUCTORS – MS Physics (17)

Jessica Pauline C. Afalla ♦ Maria Herminia M. Balgos ♦ Jan Isaac L. Bugante ♦ Josephine Jill T. Cabatbat ♦ Francesca Isabel N. De Vera ♦ Diandrew Lexter L. Dy ♦ Marvin M. Flores ♦ Paul Leonardo Atchong C. Hilario ♦ Jasher John A. Ibanes ♦ Rafael B. Jaculbia ♦ Anne Margarete S. Maallo ♦ Glaiza Rose B. Ocampo ♦ Gerold C. Pedemonte ♦ Elizabeth Ann P. Prieto ♦ Cyril P. Sadia ♦ Kristian Hauser A. Villegas ♦

INSTRUCTORS – BS Physics (15)

Kendrick A. Agapito ♦ Justin I. Alvarez ♦ Alvin Kristopher C. Bendicio ♦ Philip Jordan D. Blancas ♦ Joseph Raphael A. Bunao ♦ Carlo Vincenzo G. Dajac ♦ Miguel Antonio D. Fudolig ♦ Arriane P. Lacaba ♦ Leodegario U. Lorenzo II ♦ Jen-Jen A. Manuel ♦ Cherrie May M. Olaya ♦ James Christopher S. Pang ♦ Kristine Faith J. Roque ♦ Denny Lane B. Sombillo ♦ Maria Eloisa M. Ventura ♦ Myles Allen H. Zosa ♦

UNIVERSITY RESEARCH ASSOCIATE

- o Carlos F. Baldo III
- o Bess G. Singidas
- o Michelle Marie S. Villamayor

ADMINISTRATIVE AND TECHNICAL STAFF

Mrs. Flora P. Luis

Administrative Officer

Ronnie C. Abalayan ♦ Glenn S. Aguarte ♦ Romeo B. Albaniel ♦ Joel A. Arellano ♦ Lady Lee C. Canon ♦ Daniel S. Delos Reyes ♦ Patrocinio M. Enriquez, Jr. ♦ Rodolfo P. Gaca ♦ Angelina P. Galapon ♦ Danilo F. Gayagoy ♦ Mary Janice V. Lozada ♦ Felix V. Maulion ♦ Christopher L. Moralejo ♦ Macario C. Roque ♦ Danilo R. Taller ♦

ADMINISTRATION

Roland V. Sarmago, Ph.D.

Institute Director

May T. Lim, Ph.D.

Deputy Director for Academic Affairs

Percival F. Almoro, Ph.D.

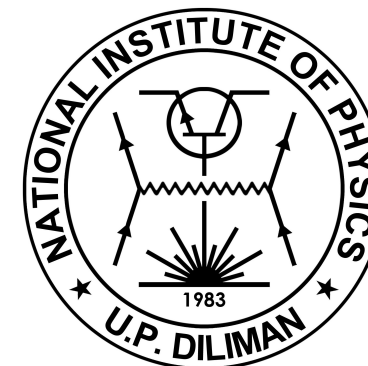
Deputy Director for Facilities and Resources

Wilson O. Garcia, Ph.D.

Deputy Director for Research and Extension Services

For further information, please contact :

Dr. Roland V. Sarmago
Director of Institute
Tel. No. : +63 2 9209749
E-mail : director@nip.upd.edu.ph
URL : www.nip.upd.edu.ph



NATIONAL INSTITUTE OF PHYSICS

College of Science
University of the Philippines
Diliman, Quezon City 1101
PHILIPPINES

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www.nip.upd.edu.ph

*Excellence in Physics Research and
Education*

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