Annual Report for the Year 2000

National Institute of Physics
College of Science, University of the Philippines
Diliman, Quezon City 1101, Philippines

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I. Executive Summary

by *Caesar Saloma*

A. Introduction

The National Institute of Physics (NIP) was established by President Ferdinand E. Marcos via the issuance of Executive Order 889 in 1983. It evolved from the Department of Physics of the College of Arts and Sciences, UP Diliman, Quezon City. The NIP started operation as an institute on 26 May 1983 immediately after the approval of Board of Regents (BOR) of the University of the Philippines (UP).

As embodied in its Charter, the NIP has been envisioned to be a national center of excellence for the acquisition, dissemination and application of knowledge in physics. Its mission is to contribute significantly to the country's quest for excellence in physics education and training, and advanced research and development in physics, applied physics and technology. In 1997, the NIP was accredited by the Commission on Higher Education as a Center of Excellence in physics in recognition of its status as the premier institute for tertiary and postgraduate physics education in the Philippines.

As an academic unit the NIP has three major functions, namely: Teaching, Research, and Extension Services. In the second semester, AY 2000 - 2001, the all PhD NIP Faculty is composed of 4 Professors, 4 Associate Professors, 8 Assistant Professors and 2 Professorial Lecturers. It offers two kinds of undergraduate degree programs (BS Physics and BS Applied Physics) in addition to graduate degree programs in MA (Physics), MS (Physics) and PhD (Physics). The successful presentation of a undergraduate thesis is a requirement in our five-year BS programs. An MS degree may be obtained either through passing the comprehensive examinations or by presenting an MS thesis. A PhD degree is granted to an MS (Physics) degree holder upon the successful presentation of PhD dissertation and the acceptance of at least one paper in an ISI-abstracted journal. To a non-MS degree holder, a PhD degree is granted after passing the comprehensive examinations with high marks, the successful presentation of PhD dissertation and the acceptance of at least one paper in an ISI-abstracted journal.

The NIP also handles the general physics course requirements of the other undergraduate degree programs of UP Diliman. To accomplish its teaching responsibilities, the NIP also relies on the services of sixteen Instructors, one Teaching Fellow and thirteen Teaching Associates all of whom are graduate students.

The NIP operates six research groups with interests in *condensed matter physics*, *instrumentation physics*, *liquid crystals*, *photonics*, *plasma physics*, and *theory*. Each research group is headed by a program coordinator. Each research group is managed by a program coordinator and consists of regular faculty members, university researchers, graduate and undergraduate students, and adjunct researchers from other academic units. Research grants from the Philippine Center for Advanced Science and Technology Research and Development of the Department of Science and Technology, Commission on Higher Education, and the University of the Philippines are the primary source of funds for the operation of our research laboratories.

The NIP is the country's leading research center in physics and applied physics. It generates the highest number of publications in ISI-abstracted journals in the last five years and is on its way to become one of the best schools of physics in the Southeast Asia.

Our faculty members are also actively involved in the Samahang Pisika ng Pilipinas (Physics Society of the Philippines) and the National Research Council of the Philippines. A number of them have also been appointed as administrators and advisers in University and other government agencies.

Latest information about the NIP may be obtained in its Internet website: **www.nip.upd.edu.ph**.

B. Personnel and Organizational Structure

On 1 June 2000, Dr. Caesar Saloma started to serve as the fourth Director of NIP by virtue of a three-year appointment by the BOR. The three previous directors are: Dr. Christopher Bernido (December 1983 - December 1986), Dr. Jose Magpantay (April 1987 - December 1992, Dr. Henry Ramos (June 1993 - May 1997, June 1997 - May 2000). In the following periods: January - March 1987, and January - May 1993; the NIP was managed by Dr. Remegio Tee and Dr. Ramos respectively, as officers-in-charge. Dr. Bernido retired from the service in 1998.

Since June 2000, Dr. Saloma has been ably assisted by the following Deputy Directors in managing the day-to-day operations of the Institute: Dr. Ronald Banzon (Academic Affairs), Dr. Luis Ma. Bo-ot (Facilities & Resources), and Dr. Arnel Salvador (Research & Extension Services). Deputy Directors serve on the basis of annual appointments.

Figure 1 presents the organizational structure of the National Institute of Physics. The NIP Executive Council which is chaired by the NIP Director, is the highest policy-making body in the Institute. Apart from the NIP Director, it is composed of full-time Professors and Associate Professors as permanent members, and the three deputy directors, and six program coordinators as *ad hoc* members. The NIP Director also chairs the Graduate Committee which consists of all full-time Ph.D. faculty members of the Institute. The Graduate Committee is tasked to review and approve applications into the NIP graduate program and to prepare the annual M.S./Ph.D. comprehensive examinations.

The Undergraduate Physics Committee consists of all full-time faculty members who are teaching courses in the B.S. Physics and Applied Physics programs. It is chaired by the Deputy Director for Academic Affairs. The General Physics Committee consists of all faculty members who are handling general physics courses (Physics 71, 72, 73, 71.1, 72.1, and 73.1). It is chaired by a faculty that is appointed the NIP Executive Council through the recommendation of the NIP Director.

Table I lists the NIP faculty in the second semester, SY 2000 - 2001 which include 16 Ph.D.'s and 28 instructors and teaching associates. A number (8) are also on official leave or special detail for a variety of reasons like postdoctoral research and graduate study. Among the faculty members, nine are tenured (L. Chan, R. Posadas, V. Abastillas, L. Posadas, D. Yanga, H. Ramos, J. Magpantay, Z. Domingo, and C. Saloma) and the rest are on temporary appointments. In addition, the teaching staff is also augmented by the appointment of two Professorial Lecturers.

To help achieve its various research objectives, the NIP also employs one University Researcher (Wilson Garcia) and three University Research Associates (Rommel Cureg, two vacant positions). Mssrs. Garcia and Cureg are connected with the Photonics Research Group and the Liquid Crystals Group, respectively. The NIP also hires a number of undergraduate and graduate student assistants on semestral appointments which are assigned to the various research laboratories based on need. Their number varies from one semester to another according to the availability of funds from the central UP Diliman administration. To qualify for assistantships, students must pass all their courses in the previous two semesters.

The following are the administrative load credit per semester of the various administrative positions: NIP Director (9 units), Deputy Director (3 units), Program Coordinators (1 unit), and System Administrator (3 units). The NIP System Administrator is in-charge of the maintenance and upgrade of the NIP

local-area network and represents the NIP in the technical committee of the Computational Science Research Center of the UP College of Science.

Table II presents the administrative and technical support staff of NIP. Those assigned at the Office of the Director are responsible for the processing and storage of documents related to appointments, teaching evaluation, and other official requests. The staff at the Supply Office are responsible for documenting the purchase and requisition of equipment, supplies and materials that are needed to carry-out the research and teaching functions of the NIP. The technical staff at the Machine Shop are trained to make precision parts and components for vacuum systems. Apart from maintenance and repair duties, those in the teaching laboratories are trained to make replacement parts and components for experimental set-ups.

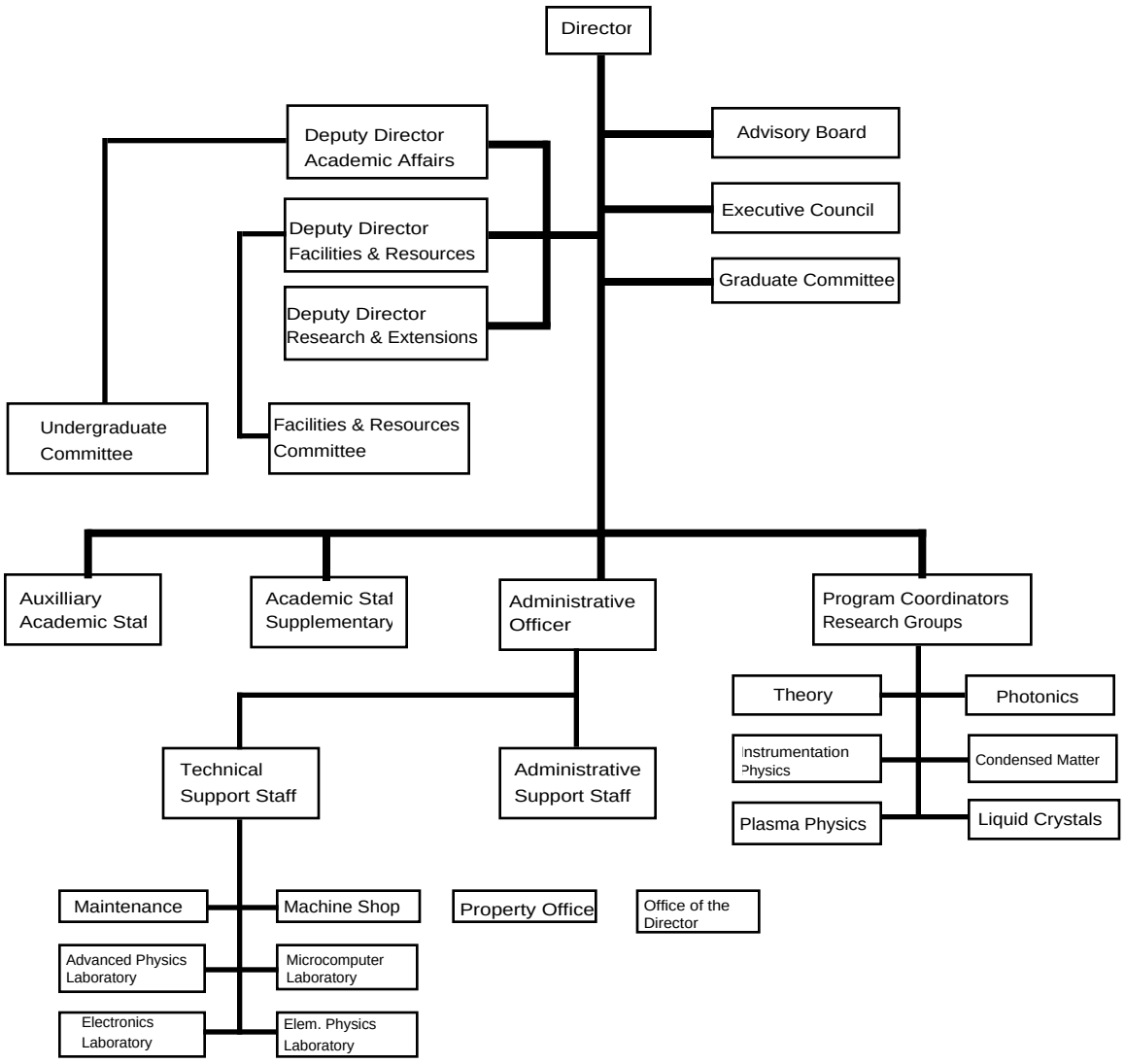

Figure 1. Organizational Structure of the National Institute of Physics

C. Academic Programs

The degree programs offered by the Institute during the period covered by this report are: at the undergraduate level, Bachelor of Science in Physics (B.S. Physics) and Bachelor of Science in Applied Physics (B.S. Applied Physics); and for graduate degrees, Diploma in Physics, Master of Arts in Physics (M.A. Physics), Master of Science in Physics (M.S. Physics), and the Doctor of Philosophy in Physics (Ph.D. Physics). Aside from these regular offerings, the NIP co-implements the following graduate degree programs: M.S. Environmental Science and Ph.D. Environmental Science (with other units in the College of Science) and the M.S. Materials Science and Ph.D. Materials Science (with the College of Engineering).

The five-year B.S. Physics degree program aims to provide students with a comprehensive, thorough, and rigorous training in physics as a solid preparation for further advanced studies in physics at the graduate level, and a general education in the humanities, social sciences, and other naturals sciences that will enable them to become broadly educated and socially conscious physicists.

The five-year B.S. Applied Physics degree program has two areas of concentration - Instrumentation Physics and Materials Science. The program aims to provide students with a broad and adequate training in physics as a foundation for careers in applied or interdisciplinary sciences like applied optics, optoelectronics, computational physics, biophysics, superconductivity, materials synthesis and growth, liquid crystals, plasma applications among others. General education in the humanities, social sciences and natural sciences are also stressed and developed for a broader educational base and social consciousness.

Each B.S. student is required to submit a thesis that is based on a research work that is supervised by an NIP faculty with an advanced physics degree. The undergraduate thesis is presented to the public at the end of each semester in a scheduled program of the Institute. An examination panel consisting of the thesis supervisor and at least two faculty with advanced physics degrees, is tasked to evaluate the correctness and suitability of the thesis work.

The one-year Diploma in Physics program aims to provide students with minimum background in physics and mathematics to enable them to upgrade their competence in teaching college physics or to pursue masters studies in

physics. This program caters essentially to non-physics majors. It can serve as a ladder-type program towards the M.A. or M.S. programs.

The M.A. Physics program is designed for completion within two years. Its objective is to upgrade the student's competence in teaching college physics. It is specifically designed for college physics teachers who do not possess a baccalaureate degree in physics.

The M.S. Physics is designed for completion within two years. Its goal is to provide students with an adequate training in physics that will prepare them for a scientific career as a physicist in academic and/or research institutions. An M.S. degree may be obtained either by: a) Passing the written comprehensive examinations, or b) Satisfying the M.S. thesis requirement.

To qualify for the M.S. degree under the Non-Thesis option, a student must: 1) Complete a minimum of 30 units of formal graduate courses; 2) Maintain a cumulative weighted average grade (CWAG) of "2.0" or better in his graduate courses at the end of each academic year; 3) Pass the M.S. comprehensive examinations.

The comprehensive examinations consists of four written tests in Classical Mechanics, Electromagnetism, Quantum Mechanics, and Statistical Mechanics. The passing score in each test is 50/100. The examination panel in the M.S. Thesis defense consists of the thesis supervisor, thesis reader, and at least two examiners. Only Ph.D. degree holders qualify to become members in the panel. Only NIP faculty with Ph.D. degree qualifies to supervise an M.S. thesis research.

The program leading to the degree of Ph.D. in Physics aims to provide students with an advanced graduate training in physics that will prepare them fully for scientific careers as world-class physicists in academic and/or research institutions. The Ph.D. program is designed for completion within five years upon enrollment by the student in the graduate program.

Two routes are possible for getting a Ph.D. degree. One is the 'straight' Ph.D. scheme wherein a B.S. Physics/Applied Physics degree enroll in the graduate school as Ph.D. student. The other is to enroll in the Ph.D. program after obtaining an M.S. degree in Physics via the thesis option.

In the first route, the requirements are: 1) Forty-five units of formal graduate courses with a CWAG of 1.75 or better, 2) Passing the comprehensive examinations with at least two tests passed with 'high-pass' scores of 75/100 or better, 3) Acceptance of at least one publication in an ISI-abstracted

journal, and 4) Presentation and acceptance of a Ph.D. dissertation. Only faculty with Ph.D. degree are eligible to supervise an M.S. thesis research for the College of Science.

The NIP Graduate Committee in its meeting on 15 November 2000 unanimously approved the following system for computing for the final scores in comprehensive examinations. The score S that an examiner gets in a given test is calculated as: S/100 = (1/100)(R + G), where R is the raw test score, G = -32g + 57, and g is the average grade of the student in the corresponding graduate course(s) where the test topic is based. For example, a student who obtained an average grade of 1.0 in Physics 241 and 242, needs only to get a score of R = 50 to be able to achieve a 'high-pass' score in the comprehensive test in quantum mechanics. The new system is adopted to encourage students to perform very well in their core graduate courses.

For an M.S. Physics degree holder to obtain a Ph.D. degree, the following requirements must be satisfied: 1) At least 24 units of formal graduate courses with a CWAG of 1.75 or better, 2) Acceptance of at least one publication in an ISI-abstracted journal, and 3) Presentation and acceptance of a Ph.D. dissertation.

All Ph.D. students are required to pass the Candidacy Examination before proceeding with their dissertation research.

Below is a summary of the number of students in the various academic degree programs offered by the Institute in the last two academic years. Figures in parentheses correspond to the number of graduates in a given term.

Degree	1st Sem 99-00	2nd Sem 99-00	Summer 99-00	1st Sem 00-01	2nd Sem 00-01
Ph.D.	3	15 (2)	1	4	15
M.S.	10 (1)	29 (5)	5 (2)	10 (1)	34
M.A.	1	1	–	2	1
B.S. Physics	151	132	95	66	134
B.S. Applied Physics	193	186 (6)	125	176	167

D. Infrastructure Development

The NIP building occupies two floors of Palma Hall Pavilion III and the Llamas Hall for a combined dedicated floor space of 4200 m^2. The main entrance is located in the Llamas Hall facing the Quirino Avenue. The first floor is being utilized by five research laboratories (Liquid Crystal, Plasma Physics, Condensed Matter Physics, Instrumentation Physics and Photonics), Machine Shop, two teaching laboratories for physics/applied physics students (Physical Electronics, Advanced Physics), and three general physics laboratories (Physics 71.1, 72.1, 73.1). The second floor houses the lecture rooms (two air-conditioned rooms with a seating capacity of 120, one room with a seating capacity of 60, four rooms with a seating capacity of 30), Audio-visual room, NIP Library, faculty offices, and the Office of the NIP Director. The diagnostics facility of the Condensed Matter Physics Laboratory is also situated in the same floor.

Rehabilitation work in the amount of PhP 630,000.00, was done in the summer months of 2000 that included the repair of the second floor corridor and repainting of its walls, and roof maintenance repairs. Regular maintenance and repair work is also done by the in-house carpenter and the building administrator.

In 2000, no progress in construction was achieved for the new NIP building along the C.P. Garcia Avenue due to lack of funds. There is good reason however, to expect that construction will resume in 2001.

E. Research Highlights

The Institute is the leading research center of physics and applied physics in the country. It produces the most number of scientific publications in ISI-abstracted journals among the physics and engineering departments in the Philippines. In the year 2000, NIP scientists published fifteen papers in such journals (See Appendix A). They also contribute the largest percentage (60% or 61 out of 101 papers) of technical presentations in the 18th Physics Congress of the Samahang Pisika ng Pilipinas in Puerto Princesa, Palawan on 27-29 October 2000.

Through the financial support of the CHED Center of Excellence grant and the UP Faculty Development Fund, our faculty have been able to present technical papers in more international conferences that at any time in the past.

Appendix B presents a listing the international conferences attended by NIP faculty in the year 2000.

NIP authors of papers in ISI-abstracted journals have also benefited from the Presidential Award for International Publications (for faculty and staff only) and the CHED Center of Excellence grant (including teaching associates and fellows). Each paper is awarded a maximum of PhP 50,000.00 that is to be distributed equally among the authors.

Three major research grants were awarded to NIP researchers in 2000. Professor Ramos received a three-year research project worth PhP 13.825 Millions from the Department of Science and Technology (Grants-in-Aid) for the development of prototype plasma devices (Wien filter, carbon thin films, etc.) for industrial applications. The project started on 1 June 1999. Dr. Salvador received a PhP 6.5 Million research project by PCASTRD-DOST for the MBE growth of InGaAsP and InGaAs optoelectronic devices for fiber optic communications. Professor Saloma received a PhP 2.8 Million research project from CHED for the development of a computer cluster for investigating the dynamics of complex systems like vehicular traffic flow, multicellular organisms and photon transport in highly-scattering media. The funds in the project were used to develop a 22-node cluster at the Instrumentation Physics Laboratory.

Largely due to their outstanding research performance, the following NIP students garnered awards during the Recognition Program of the College of Science on 16 April 2000: Dr. Carlo Mar Blanca (Most Outstanding Ph.D. Graduate), 2) Miss May Lim (Most Outstanding M.S. Graduate), 3) Mr. Carlo Amadeo Alonzo (*magna cum laude*, Highest Undergraduate Academic Excellence Award), 4) Mr. Johnrob Bantang (*cum laude*, Outstanding B.S. Graduate for Applied Physics), and 5) Miss Minerva Cruz (Best Undergraduate Thesis in Applied Physics). Mr. Alonzo also received the BPI Science Award in February 2000.

Professor Saloma was elected into the Editorial Board of *Optical Review* as a member of its International Advisory Board. *Optical Review* is an ISI-abstracted journal that is published by the Optical Society of Japan.

Through the efforts of Dr. Salvador and Dr. Bo-ot, the NIP Library was opened on 22 November 2000 in Room 3215 (formerly the NIP Staff Lounge). The library offers books and full electronic access to journals of the Optical Society of America and the American Physical Society in addition to *Nature* and *Science*.

F. Extension Efforts

On 31 December 2000, Prof. Saloma completed his second two-year term as President of the Samahang Pisika ng Pilipinas (Physics Society of the Philippines) which is now being led by Dr. Salvador. Simultaneously, Dr. Domingo also completed her term as SPP Secretary-General and is now succeeded by Dr. Soriano. Among the SPP councilors whose terms have also ended are: Dr. Sarmago, Mr. Garcia, and Miss Lim.

The NIP and the Philippine Foundation for Physics, Inc. (PFPI) the NIP initiated the following joint projects in the second half of 2001: 1) Sale of textbooks for the Physics 71 course series, and 2) Sale of laboratory manuals for Physics 71.1, 72.1, and 73.1. The funds that will be generated by the said projects will be used to augment the income of the NIP non-academic personnel and to establish faculty grants. The PFPI is a non-stock non-profit foundation that was established more than five years ago by NIP alumni to promote the interest and well-being of their *alma mater*. The PFPI also helps the NIP promotes its research capabilities to the private sector through commissioned research projects and training workshops.

G. Prospects for 2001

The following are the more important challenges facing the Institute in the present time: 1) Increasing the number of B.S. Physics/Applied Physics graduate per academic year, 2) Improving the quality of NIP Graduate School, and 3) Completion of the new NIP Building.

For the past five years ending the SY 1999-2000, the NIP produces an annual average of less than ten BS graduates from an undergraduate population of about 300 (average number in the last two academic years). Every year, the NIP accepts a total of 120 freshmen for its two non-quota B.S. programs. The B.S. Physics/Applied Physics programs are flagship scholarship programs of the DOST-SEI in terms of stipend value. Despite the favorable conditions, less than 50% of the freshmen are able to reach the third-year level of the B.S. programs in regular time. Our studies show the following causes of mortality: 1) Inadequate high school preparation in physics and mathematics, 2) Lure of shifting to traditional courses in engineering and computer science, and 3) Difficult B.S. curriculum requirements.

The following will be implemented to improve the situation: 1) Promotion and active recruitment of high school students in the leading (science) high schools in the country, 2) Revision in the B.S. curriculum to allow for more choice in the

elective courses and to remove the APE requirement in Math 11, and 3) Undertaking of (social) activities to encourage the freshmen and sophomores to remain with NIP. Efforts to promote NIP among the student population will be done in collaboration with the UP Physics Association.

The reputation of NIP as a center of excellence in physics and applied physics is derived mainly from the quality of its graduate school. An intellectually-productive faculty is the most crucial component of a respected graduate program. It is also the most difficult to assemble and develop. Outstanding professors attract and produce outstanding Ph.D. graduates. They also bring money into the Institute in the form of research grants and commissioned projects. At the present time, not all Ph.D. faculty publish in ISI-abstracted journals on a yearly basis nor serve as research supervisors of graduate students. This situation has to be improved considerably.

The lack of space is a major reason why NIP could not offer more sections to satisfy the current demand in Physics 71.1 where less than 50% is served. The resumption of the new NIP building construction provides hope for a 100% increase in the enrollment capacity for the said course in the second semester of AY 2001-2002.

Table I. Faculty Members of the National Institute of Physics
(2nd semester, SY 2000 - 2001)

PROFESSORS	Lorenzo C. Chan, Ph.D.	*Quantum Field Theory*
	Jose A. Magpantay, Ph.D.	*Quantum Field Theory*
	Henry J. Ramos, Ph.D.	*Experimental Plasma Physics*
	Caesar A. Saloma, Ph.D.	*Optics, Signal Processing*
ASSOCIATE PROFESSORS	Vivencio Abastillas, Ph.D.	*Photoacoustic Spectroscopy*
	Zenaida B. Domingo, Ph.D.	*Liquid Crystal Physics*
	Arnel A. Salvador, Ph.D.	*Condensed Matter Physics*
	Roland V. Sarmago, Ph.D.	*Condensed Matter Physics*
ASSISTANT PROFESSORS	Ludek Jirkovsky, Ph.D.	*Statistical Physics*
	Roy B. Tumlos, Ph.D.	*Experimental Plasma*
	Marlon Rosendo H. Daza, Ph.D.	*Photonics*
	Ronald S. Banzon, Ph.D.	*Computational Physics*
	Luis Ma. T. Bo-ot, Ph.D.	*Experimental Plasma Physics*
	Maricor Soriano, Ph.D.	*Signal, Image Processing*
	Caesar Palisoc, Ph.D.	*Quantum Field Theory*
	Vincent Ricardo M. Daria, Ph.D.	*Computational Physics, Optics*
INSTRUCTORS	Giovanni A. Tapang	Michelee G. Patricio
	Christopher P. Monterola	Percival F. Almoro
	Timothy J. Dennis	Eric A. Galapon
	Vanessa de Villa	May T. Lim
	Matthew George O. Escobido	Michelle Calix
	Rumelo Amor	Nelson Caroy
	Rainier Awayan	Minerva Cruz
TEACHING FELLOW	Felicisimo S. Domingo	
TEACHING ASSOCIATES	Liza T. Davila	Rommel C. Gutierrez
	Albert Z. Francia	Michelle Bailon
	Erwin G. Navarro	Miguel DL. Yambot
	Nathaniel Hermosa II	Christine S. Ison
	Peter John L. Rodrigo	Johnrob Y. Bantang
	Kim A. Gargar	Jonathan A. Palero
	Edmundo P. Casulla	
PROFESSORIAL LECTURERS	Yumian Su, Ph.D.	*Field and Particles*
	Pablo Saligan, Ph.D.	*Condensed Matter Physics*
FACULTY ON LEAVE	Danilo M. Yanga, Ph.D.	Professor
	Roger Posadas, Ph.D.	Professor
	Linda S. Posadas, Ph.D.	Associate Professor
	Carlo Mar Blanca, Ph.D.	Assistant Professor
	Epifanio Bagarinao, Jr., Ph.D.	Instructor
	Cristine DLR. Villagonzalo	Instructor
	Alvarado B. Tarun	Instructor
	Rex S. Absin	Instructor
	Armando S. Somintac	Instructor

Table II. Staff of the National Institute of Physics (2nd semester, SY 2000-2001)

ADMINISTRATIVE PERSONNEL

Office of the Director

Flora P. Luis	Administrative Officer II
Angelina H. Palo-Galapon	Data Entry Mach. Optr III
Christopher L. Moralejo	Reprod. Eqpt. Mach. Optr. II

Supply and Property Office

Jaime S. Sayaman	Supply Officer II
Antonio Sajol, Jr.	Administrative Assistant
Patrocinio M. Enriquez, Jr.	Property Custodian

TECHNICAL SUPPORT

Machine Shop

Danilo F. Gayagoy	Mach. Shop Foreman
Rodolfo P. Gaca	Machinist

Electrical & Electronics and other Services

Roberto A. Gray	Electrician
Felix V. Maulion	Electronics Comm. Eqpt. Tech. 2001 Building Administrator
Romeo B. Albaniel	Prec. Inst. Techn.
Daniel S. De los Reyes	Laboratory Aide (Elementary Physics)
Neil Balila	Laboratory Aide (Physical Electronics)
Macario Roque	In-house Carpenter

II. Report of the Deputy Director for Academic Affairs

by *Ronald Banzon*

A. Curricular Proposals

The NIP is in the process of updating its curricula. The initial proposals made in the NIP Assessment and Planning Workshop of 1999 are currently being reviewed.

A current concern with the BS Applied Physics programs (Instrumentation Physics Concentration and Materials Physics Concentration) is that it would require graduates of these programs to take undergraduate courses in the BS Physics program to be eligible to take the graduate core courses.

While it may have been initially proposed to have BS Applied Physics programs to accommodate students who would wish to pursue careers outside academia, the practical implementation of these programs have matured to a state that makes it appropriate for graduates of these programs to pursue graduate studies.

There were initial proposals to institute a graduate program in applied physics. At this time the Institute finds it more urgent to harmonize the current undergraduate programs with its graduate program.

A major consideration in the revision of the undergraduate programs is the enabling of any NIP graduate of a bachelor's degree to pursue graduate studies at the Institute without having to take undergraduate courses for audit.

It is believed that more flexible programs are needed to accommodate real advances in technology that may require specific background not currently covered by instituted courses.

A summary of the characteristics of the NIP undergraduate programs has been prepared to facilitate the formulation of proposed revisions. The summary may be found in **Table 3**.

B. Developments in the Implementation of Undergraduate Programs

1. Retention Rules

The academic year 2000-2001 saw the retention program enter its second year of use as guideline for the admission/readmission of students into any of the NIP undergraduate programs. The first batch of students to be affected by the NIP retention rules (freshmen of AY 1999-2000) will be evaluated by the end of the current academic year.

It was to minimize the number of relatively advanced undergraduate students that fail to secure an undergraduate thesis adviser, at least a year before their intended graduation, that the NIP instituted a *retention program* that defines the minimum acceptable performance of an undergraduate in his/her program of study. These undergraduate retention rules may be found in **Table 4**.

The retention program also provided a formal guideline in the admission or readmission of students to any of the NIP undergraduate programs. In addition, it provides the NIP a certain measure of control as to the number of students that it could practically accommodate.

2. Advising

To aid in the registration advising of students, all physics undergraduates have been required to submit a True Copy of Grades (TCG) at the end of every semester since the AY 1998-1999. These TCG copies are kept by the NIP until the student ceases to be an undergraduate physics major.

The student's TCG remains with his/her assigned registration adviser until the student is able to secure an undergraduate research adviser, who then keeps the student's records for reference.

In previous years, only the Deputy Director for Academic Affairs advised physics students not yet attached to an undergraduate thesis adviser. This was mainly due to the changing policies regarding enrollment at that time.

In response to the growing number of physics majors, registration advising of physics students not yet attached to research advisers have been distributed to faculty members with at least an MS degree during

the First and Second Semesters of AY 2000-2001. This actualizes a resolution made during the NIP Assessment and Planning Workshop of 1999.

Advisers were provided with advising materials that may help them advise students properly regarding their choice of courses for the semester concerned.

3. Undergraduate Thesis

The schedule for the undergraduate thesis presentations for a particular term has been religiously set to the Wednesday prior to the last day of classes, and four weeks before that - the thesis drafts for panel members. The practice started during the AY 1998 - 1999.

Each student is allotted thirty (30) minutes to present the thesis, followed by an open forum of about twenty (20) minutes, which includes the examination of thesis panel members

The four weeks prior to defense deadline for the thesis draft for examination panel members was instituted to allow sufficient time for its review. The number of possible panel members (at least MS degree holders) has not increased significantly in the past few years, and more often than not only faculty members with doctoral degrees end up as examination panel members. It has not been unusual for some panel members to end up having to examine more than three undergraduate research theses. Such considerations were also considered in the institution of the four weeks prior to defense deadline for undergraduate thesis drafts.

4. Problems Associated with Enrollment

To address the enrollment problem of physics majors in required courses offered outside the NIP, for which the Institute has sufficient expertise, the Institute intends to utilize Physics 195 (Special Topics: Selected topics of current interest in modern physics) and Applied Physics 195 (Special Topics: Selected topics of current interest in applied physics) to substitute for those courses.

In particular, the NIP is considering the substitutions for the EEE and ECE courses required in the Applied Physics Program (Instrumentation Physics concentration): EEE 101 (formerly EE 131), ECE 123 (formerly EE 135).

This will be pursued in coordination with the EEE Department of the College of Engineering.

5. Courses Taken by Applied Physics Students at the College of Engineering

The table below indicates new course numbers for subjects taken by BS Applied Physics students at the College of Engineering.

Table 5: New Course Numbers for Engineering Courses

Old Course Number	New Course Number
EE 6 (3 u.)	EEE 6 (4 u.)
EE 7	EEE 7
EE 131 (3 u.)	EEE 101 (3 u.)
EE 135 (3 u.)	ECE 123 (3 u.)
ES 31 (3 u.)	MET E 143 (3 u.)

6. New and Recent Textbook Adoptions

In a continuing program to adopt textbooks for undergraduate courses, the following courses have adopted new textbooks.

a. Physics 101, Physics 102, and Physics 103
These initial physics courses for majors have historically adopted the same textbook used in the Physics 7x series. These courses now use Paul A. Tipler's "Physics for scientists and engineers" 4th edition (Freeman-Worth: 1999).

b. Physics 141 and Physics 142
"Introductory Quantum Mechanics", 3rd ed. by Liboff (Addison-Wesley:1998)

c. Applied Physics 155
"A First Course in Computational Physics" by DeVries (Wiley: 1994).

C. Service Courses

1. Textbooks

a. Physics 7x Series Courses
A change in the textbook being used for the Physics 7x series was made at the start of the current academic year, beginning with Physics 71 during the First Semester AY 2000-2001. Physics 72 and Physics 73 continued to use the old textbook for continuity.

After one academic year of assessment the Textbook Committee, consisting of the General Physics Committee Chair and representatives teaching the different Physics 7x series, chose Paul A. Tipler's "Physics for scientists and engineers" 4th edition (Freeman-Worth: 1999) among several other textbooks for consideration.

b. Physics 7x.1 Series Courses

The laboratory manuals for Physics 71.1, Physics 72.1, and Physics 73.1 were successfully completed in time for the Second Semester AY 2000-2001 under the supervision of Dr. Maricor Soriano.

c. Physics 104

The current textbook for the engineering classes of Physics 104, "Nonclassical Physics" by Harris (Addison-Wesley: 1999), is about to end its third year of adoption. It has been suggested to use the same text for physics majors.

2. Addressing the Enrolment Problem

The NIP used to offer a total of fourteen (14) lecture sections of Physics 7x courses every semester, with the result of having to add one more section. This usually results in the same number of sections for Physics 71 and Physics 72, which were six (6) sections for each course. Physics 73 invariably needed only three (3) sections every semester. This totals fifteen (15) lecture sections for the Physics 7x series. The equal distribution of the number of sections in Physics 71 and Physics 72 led to the increased backlog in Physics 71.1 enrollment.

A change in the distribution was made to be more responsive to past results of success/failure of students in these courses. Also, since most curricula that needs Physics 71 has this course listed in the second semester, the number of sections was increased in favor of Physics 71 during that semester and reversed during the first semester. This distribution proved more consistent with the demand, taking into consideration the failing rate in Physics 7x courses.

The original total number of sections in Physics 7x courses was pegged at fourteen (14) sections. During the First Semester, we initially offered four (4) sections of Physics 71, seven (7) sections of Physics 72, and three (3) sections of Physics 73. The idea was to reduce the backlog in

Physics 71.1 enrollment. The demand for Physics 71 during the First Semester was higher than expected and prompted the NIP to open another lecture section of Physics 71. The same number of sections (fifteen) was then offered during the Second Semester.

With the limited resources for laboratory courses, the NIP was forced to open off-hour and Saturday classes for Physics 71.1, with assurances from UP Administration that overtime will be paid to non-academic personnel needed for those classes. The number of laboratory sections in Physics 71.1 was increased from twenty (20) to twenty-seven (27) - five (5) classes with 4 - 6 PM schedule Monday through Friday and two (2) more classes on Saturday.

The table below (**Table 6**) summarizes the regular service courses enrollment for AY 2000-2001.

Table 6: Service Courses Enrolment for First and Second Semester AY 2000-2001

Course	Number of Sections		Number of Students		Average Number of Students per Section	
	First	Second	First	Second	First	Second
Physics 71	5	7	630	835	126.00	119.29
Physics 72	7	5	640	518	91.43	103.60
Physics 73	3	3	301	317	100.33	105.67
Physics 71.1	20	27	435	541	21.75	20.04
Physics 72.1	20	20	349	337	17.45	16.85
Physics 73.1	12	14	228	277	19.00	19.79

The average number of students per section exceeds the initial number of slots allotted for the class in both semesters. The only exceptions are Physics 71 during the first semester and Physics 72.1 during the first and second semesters.

From course demand figures released by the Office of the University Registrar, Physics 71.1 had a demand for 1019 slots. With the enrollment of 541 students in 27 sections, the Institute has at least reduced the estimated increase in its backlog.

For its part, the NIP intends to increase its laboratory class offerings during summer to reduce further the backlog in physics laboratory enrollment.

3. Physics 103 and Physics 104 for College of Engineering Students

The Institute has been allotting two sections, of at least one hundred slots per section, of Physics 103 every second semester for students of the College of Engineering that require them. A similar arrangement is made for Physics 104 every first semester. They have invariably had the schedule 5:30 - 7:30 PM, upon request of the College of Engineering.

Currently, only senior faculty members handle these courses.

4. Substitution of Courses

a. Physics 72

In a communication with the EEE Department of the College of Engineering (26 September 2000), the following courses are accepted as Physics 72 equivalent: EE 23 (3u), 31 (3u), 33 (3u) (formerly 13, 14, 18), and Physics 103. EEE students shifting to another engineering major usually request the substitution.

b. Nat.Sci. I

From OUR Memorandum 00-094, taking Physics 71, Physics 72, Physics 73, Chem 16, and Chem 17 is equivalent to Nat. Sci. I.

D. Undergraduate Thesis

1. Second Semester AY 1999-2000

The Undergraduate Thesis Presentations were held on Wednesday, 8 March 2000, at the NIP AVR. The schedule of presentations was as follows.

09:00 AM	Carlo Amadeo C. Alonzo (BS Applied Physics) "Absorption and Fluorescence Measurements of Erbium-doped Fluoroaluminate Glass" Adviser: Dr. M. Daza Panel: Dr. A. Salvador, Dr. C. Saloma
10:00 AM	Johnrob Y. Bantang (BS Applied Physics) "Fast Algorithms and Diffraction Effects in Monte Carlo Modeling of Light Propagation through Scattering Media" Adviser: Dr. C. Saloma Panel: Dr. R. Banzon, Dr. L. Bo-ot
11:00 AM	Behnido Yambao Calida (BS Applied Physics) "Characterization of the Raman Spectra of Bulk and Fiber Silica (SiO2)" Adviser: Dr. M. Daza Panel: Dr. C. Saloma, Dr. A. Salvador
01:00 PM	Peter John Llema Rodrigo (BS Applied Physics) "Optical-Feedback Semiconductor Laser Michelson Interferometer for Measurement of Displacements without Ambiguity" Adviser: Dr. C. Saloma Panel: Dr. A. Salvador, Mr. W. Garcia
02:00 PM	Darwin Chio Te (BS Applied Physics) "Performance of a Laser Beam Scanning Confocal Microscope" Adviser: Dr. C. Saloma Panel: Dr. A. Salvador, Dr. R. Tumlos
03:00 PM	Aimee Lynn Zandueta (BS Applied Physics) "Growth of BSCCO Thin Films by RF Magnetron Sputtering of Single and Multiple Targets" Adviser: Dr. R. Sarmago Panel: Dr. R. Tumlos, Mr. Gil Nonato Santos

2. Summer 2000

The Undergraduate Thesis Presentations for summer 2000 were held on Wednesday, 24 May 2000, at the NIP AVR. The schedule of presentations was as follows.

10:00 AM — Ma. Trinidad P. Arcellana (BS Applied Physics)
"Optical Absorption Measurement of GaAs/AlGaAs Quantum Wells"
Adviser: Dr. Arnel Salvador
Panel: Dr. Caesar Saloma, Dr. Marlon Daza

11:00 AM — Nelson Y. Caroy (BS Physics)
"Thermodynamics of a One-dimensional Gravitational Gas (1DGG) in a Uniform External Field"
Adviser: Mr. Jose Perico H. Esguerra
Co-adviser: Dr. Luis Ma. T. Bo-ot
Panel: Dr. Jose A. Magpantay, Dr. Lorenzo C. Chan

01:00 PM — Ojie L. Santillan (BS Applied Physics)
"Effect of Acceleration on Ion Beam Focusing in a Plasma Sputter-type Negative Ion Source"
Adviser: Dr. Henry J. Ramos
Panel: Dr. Arnel Salvador, Dr. Carlo Mar Blanca

02:00 PM — Irma V. Santos (BS Applied Physics)
"Growth of C-axis Oriented Superconducting $Bi_2Sr_2CaCu_2O_{8+\delta}$ Films Suitable for Device Fabrication"
Adviser: Dr. Roland V. Sarmago
Panel: Dr. Roy Tumlos, Dr. Zenaida Domingo

03:00 PM — Roberto Salazar Vitancol (BS Applied Physics)
"Parametric Study of a Dye Laser with Quenching Cavity"
Adviser: Dr. Marlon Daza
Panel: Dr. Ronald S. Banzon, Dr. Henry Ramos

3. First Semester AY 2000-2001

The Undergraduate Thesis Presentations for First Semester AY 2000-2001 were held on Wednesday, 27 September 2000, at the NIP AVR. The schedule of presentations was as follows.

9:00 AM: Cureg, Gavino (BS Applied Physics)
"Thermochromic Liquid Crystal Formulations (Cholesteryl Ester & TM74A): Thermal and Optical Characterizations"
Adviser: Dr. Zenaida Domingo, Co-adviser: Dr. Leonorina Cada
Panel: Dr. Arnel Salvador, Dr. Roland Sarmago

10:00 AM: Francia, Alberto Jr. (BS Applied Physics)
"Writing of Holographic Gratings in Dye-Doped Polymer Dispersed Liquid Crystals"
Adviser: Dr. Zenaida Domingo
Panel: Dr. Carlo Blanca, Dr. Marlon Daza

11:00 AM: Morales, Marinette (BS Physics)
"Vander Lugt Filter: Theory and Application to Optical Pattern Recognition"
Adviser: Dr. Marlon Daza
Panel: Dr. Carlo Blanca, Dr. Henry Ramos

2:00 PM: Ortega, Decilon (BS Applied Physics)
"Development and Characterization of a Nd:YAG Pumped Dye Laser"
Adviser: Dr. Marlon Daza
Panel: Dr. Caesar Saloma, Dr. Ronald Banzon

3:00 PM: Palero, Jonathan (BS Physics)
"Generation of UV, VIS, and NIR Laser Light by Stimulated Raman Scattering in Hydrogen Using a 355-nm Pulsed Nd:YAG Laser"
Adviser: Mr. Wilson Garcia, Co-adviser: Mr. Jomar Amistoso
Panel: Dr. Arnel Salvador, Dr. Vincent Daria

4:00 PM: Villanueva, Yolanda (BS Applied Physics)
"Optical Data Encryption in a Fe-doped Lithium Niobate Crystal"
Adviser: Dr. Marlon Daza
Panel: Dr. Maricor Soriano, Dr. Ronald Banzon

E. Registration

In the NIP Assessment and Planning Workshop of 1999 the Institute resolved not to have a permanent committee on registration. Instead, all members of the General Physics Committee handle the enlistment and other logistic requirements in coordination with the NIP Administrative officers. It is the understanding of the Institute, as expressed in its workshop of 1999, that registration for classes is not one of the functions of academic personnel.

The Institute awaits a remedy to this lingering illness of the University.

F. Shifting Guidelines

The Institute started implementing the following minimum average requirements for students shifting to any of its programs.

Table 7: Minimum Acceptable Averages for Shifting

Student's Original School/Unit	GWA	Science/Math Average
Within Diliman	2.75	2.5
Other UP	2.25	2.0
Other schools	1.75	1.5

G. Undergraduate Program Graduation Rate

The statistics for undergraduate physics student population from the academic year ending 1991 to 2000 suggest an increasing enrollment in the NIP undergraduate programs. The slight decrease in AY 2000-2001 was due to the imposition of a maximum admission of about 120 freshmen. The imposition was based on the capability of the NIP to service its majors assuming a large percentage of them are able to proceed to their major subjects.

The current distribution of undergraduates was estimated from the enrollment in major courses found at different year levels in the NIP curricula. The current enrollment suggests about 45-76 second year, 38-62 third year, 21-29 fourth year, and 10-25 fifth year and up students. There is also about 24 second year students taking the off-season Physics 101 class this 2nd Semester AY 2000-2001.

From these considerations, it is estimated that about forty percent (40%) of the NIP undergraduates are freshmen (since the higher limit of above estimates sum to 216, and using the larger 344 total (AY 1999-2000) for the total number of majors). Using this estimated percentage of the number of freshmen, we estimate the graduation rate percentage as the number of graduates over the number of freshmen five years previously. This results in an estimated fifteen percent (15%) graduation rate.

The low graduation rate percentage may be attributed to the large number of majors shifting out of the program by their second or third year. The previous enrollment distribution invariably had something like 100-150 freshmen, 80 sophomores, 40 third year, 20 fourth year, 10 fifth year. This is a distribution that still seems to hold. There is however a noticeable increase in the number of physics majors in their third year.

There are currently over sixty (60) students in their third year of courses. This introduced a strain in the resources of the Institute as far as laboratory courses are concerned. Most of the advanced laboratories are not equipped to handle more than about twenty students at a time. In some cases, not even more than ten at a time. This necessitated an increase in the number of laboratory sessions for major courses.

The increased number of laboratory sessions for major courses has become an unwieldy logistic problem. The schedule of a particular course with a laboratory component now has at least two sessions. In some cases, like Applied Physics 155, there are six laboratory sessions.

We expect the increasing strain on resources to lead to inevitable breakdown and requests for repairs or replacements. This strain, it seems, is transmitted to students who would have to finish their tasks with constraints that could have been eased by a relative abundance of resources. These constraints seem to somehow contribute to the large number of students who are unable to proceed further into the program.

The use of research laboratory facilities is equally strained. The number of undergraduate researchers in the traditional research groups of the Institute could not increase without a commensurate increase in their resources. This a major constraint in the number of majors that are able to defend their undergraduate research on time. Not a few of our majors defend their undergraduate thesis beyond their fifth year of undergraduate study.

The average time to graduation in any of the undergraduate programs of the Institute is currently being studied, along with the distribution of students in the year-defining major courses. It is hoped that this study will result in proposals that would better address the problem of relatively low rates and absolute numbers of graduates in NIP undergraduate programs.

Table 2: Summary of Current NIP Undergraduate Programs

General Education Courses		**Common Other Science Subjects**	
Units		Units	
Philosophy I	3	Math 14/17	3 or 5
History I	3	Math 53	5
History II	3	Math 54	5
Communication I/Komunikasyon I	3	Math 55	3
Communication II/Komunikasyon II	3	Math 121.1	3
Communication III/Komunikasyon III	3	Geology 11	3
Social Science I	3	Geology 11.1	1
Social Science II	3	Chemistry 16	5
Humanities I/Humanidades I	3	Chemistry 17	5
Humanities II/Humanidades II	3	Biology 11	5
Science, Technology, and Society	3	Biology 12	5
P.I. 100	3		
TOTAL:	**36**	TOTAL:	**43 or 45**

Common Physics Subjects		**BS PHYSICS**		**BS APPLIED PHYSICS** (Instrumentation Physics concentration)		**BS APPLIED PHYSICS** (Materials Physics concentration)	
	Units				Units		Units
Physics 101	4	Units		Phys 105	3	Phys 105	3
Physics 101.1	1	Phys 114	3	Phys 132	3	A. Phys 171	3
Physics 102	4	Phys 122	3	Phys 161	3	A. Phys 173	3
Physics 102.1	1	Phys 132	3	Phys 165	3	A. Phys 175	3
Physics 103	4	Phys 141	3	A. Phys 173	3	A. Phys 176	3
Physics 103.1	1	Phys 142	3	A. Phys 182	4	Chem 283	
Physics 104	4	Phys 151	3	A. Phys 185	4	Chem 28.1	2
Physics 104.1	1	Phys 152	3	A. Phys 186	4	Chem 112	3
Physics 111	3	Phys 165	3	E.E. 6	3	Chem 153	3
Physics 112	3	Phys 170	3	E.E. 7	3	Chem 153.1	2
Physics 113	3	Phys 180	3	E.E. 131	3	Geo 40	4
Physics 121	3	Phys/A. Phys	3	E.E. 135	3	E.S. 11	3
Physics 131	3	Phys/A. Phys	3			E.S. 13	3
Physics 191	4	Sci/Math 3				E.S. 31	3
Physics 192	3						
Physics 196	1	TOTAL:	**39**	TOTAL:	**39**	TOTAL:	**41**
Physics or A. Physics 199	3						
Physics or A. Physics 200	3						
A. Physics 155	4						
A. Physics 181	4						
		GRAND TOTAL:		GRAND TOTAL:		GRAND TOTAL:	
TOTAL:	**57**	**175 or 177**		**175 or 177**		**177 or 179**	
GRAND TOTAL OF COMMON SUBJECTS:	**136 or 138**						

Table 3: NIP Retention Rules

BS PHYSICS/APPLIED PHYSICS RETENTION RULES

All BS Physics and BS Applied Physics students must satisfy the following minimum requirements for retention in their respective programs of study.

1. The student must maintain an average of 2.75 in all Math and Physics courses at the end of his/her second year, and every year thereafter, until he/she is attached to an undergraduate research adviser.

2. The student must have passed the following courses by the end of his/her third year: Math 55, Math 121.1, and Physics 112.

3. The student must have passed the following courses by the end of his/her fourth year: Physics 104, Physics 104.1, Physics 121, and Physics 131.

4. The student must have an undergraduate research adviser (not just apprenticeship) by the end of his/her fourth year and continuously have one until the end of his/her program.

Inability to comply with the above minimum requirements disqualifies the student from the BS Physics/BS Applied Physics program.

Approved by the NIP Graduate Committee, 9 June 1999, for implementation starting AY 1999-2000.

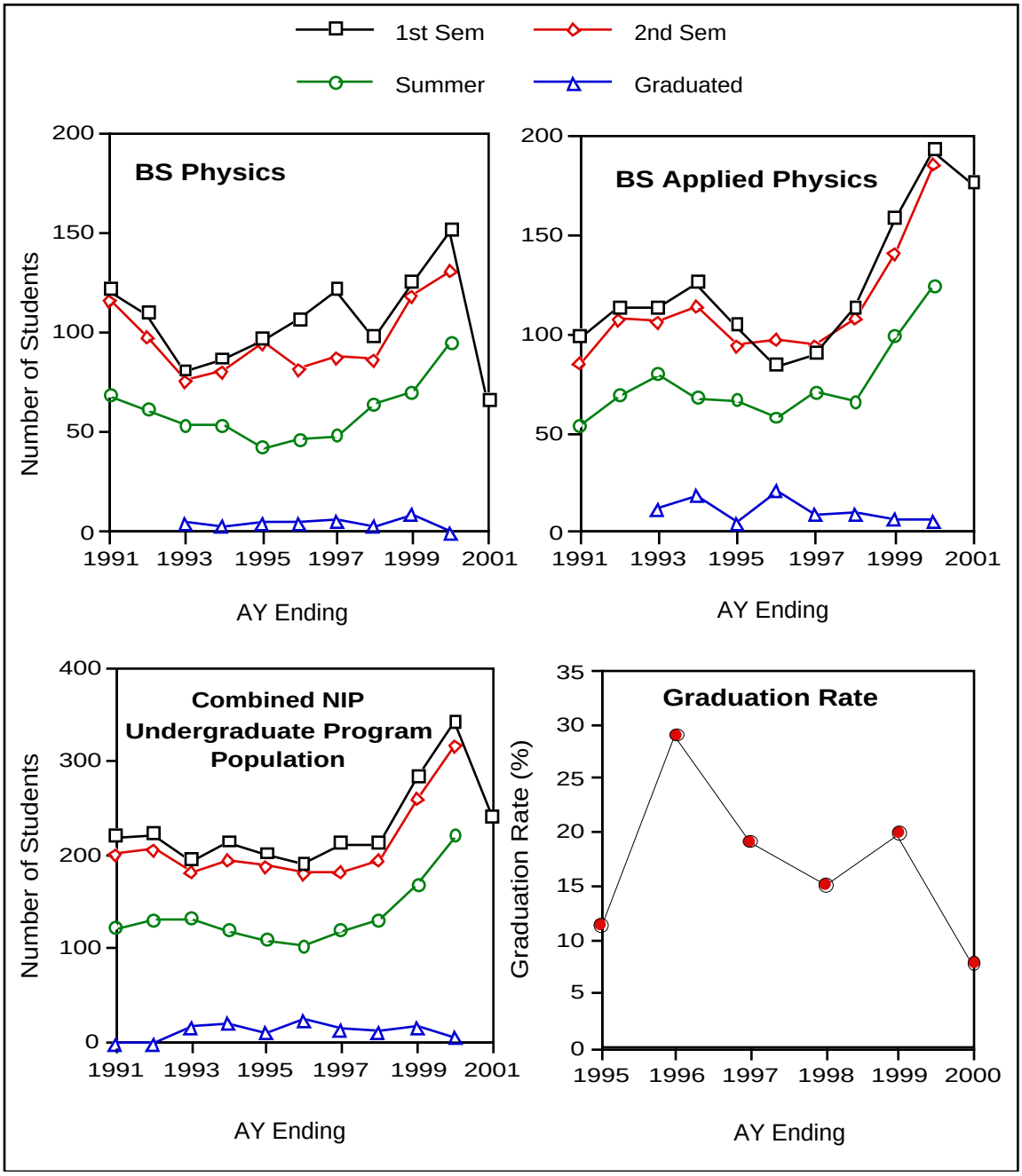

Figure 2. NIP undergraduate program statistics

III. Report of the Deputy-Director for Resources and Facilities

by *Luis Maria Bo-ot*

The Resources and Facilities Committee is composed of representatives from the Research Labs, the Elementary and Advanced Physics Labs, the Computer Lab and the Electronics Lab. The direct monitoring of the facilities in the Research Labs are left to the Laboratory Coordinators themselves. Monitoring of the Elementary Physics Lab is assigned to Dr. M. Soriano while for the Advanced Physics Lab, Dr. C. Blanca was in-charge until October 2000 after which Ms. May Lim assumed the responsibility. Dr. V. Daria supervises the Electronics Lab and Dr. R. Banzon handles the Computer Lab. The Building Administrator represents the Administrative Staff in the Committee.

A. Accomplishments

The major improvement in the facilities of NIP for the year 2000 was the Rehabilitation and Repair of NIP during the months from April to early June. The scope of work amounted to over P 630,000.00 and included the repair of leaks along Llamas Hall and the Junior Faculty Wing, the repainting of corridor walls and the reflooring of the 2nd floor. Repainting was then extended to include one of the big lecture rooms.

During the previous year, equipment was also added to the resources of the Elementary Physics, Advanced Physics and the Computer Laboratories. The Elementary Physics Laboratories are the venues for the laboratory service courses offered by NIP. These are Physics 71.1, Physics 72.1 and Physics 73.1. The other two laboratories are teaching venues for senior-level physics undergraduate courses.

The Advanced Physics Lab acquired last year some US$ 1800.00 worth of experimental set-ups and/or their support components. Most of these set-ups involve the study of Optics. These additions complement those acquired in 1999 amounting to around US$ 5100.00. Both were taken from the CHED Center of Excellence Program. Aside from these, computer interfaces with the experiments were facilitated by the provision of 3 computer units. As of the moment, the Advanced Physics Laboratory has planned the acquisition of experimental set-ups related to Heat and Microscopy.

For the Elementary Physics Lab, additions in the experimental set-ups were 10 set-ups for the study of magnetic induction, 6 for the study of the electric field, 7 for ballistic trajectory, 4 for the discharge tube and 6 for friction.

The Computer Laboratory was provided additional computers making the total workstations equal to 12. This would make the classes more ready to accommodate the increasing number of students. A computer was also provided for the use of the Electronics Laboratory. Late last year, the Electronics Lab was repainted together with Elementary Physics Lab.

Other improvements during the year were the installation of airconditioning units at the two big lecture halls of NIP and at the Theory Group Room. The main entrance driveway has since been asphalted. Some of the old equipment that used to stand along the corridors has been transferred back to CMO. The Committee also assisted the Deputy Director for Research and Extension in its Library project. The Library being a proper area for study and research is now provided with stacks, reading tables, a sofa and 2 computers.

The NIP also hired a contractual all-around carpenter who was kept busy during the year making new furniture and repairing old ones for the Faculty, providing the drainage pipes for the corridor aircons, continuing the repainting of classrooms, servicing of the room aircons, and undertaking miscellaneous minor repairs like leaks along window ledges and countermeasures against infestation of bats. This person performed as a general handyman who acted quickly upon the continuous requests of the Research Labs--a vital component of NIP--thereby not hampering any of their activities.

During the year 2000, the Deputy Director started to involve more the Building Administrator in the day-to-day operations of NIP. This is envisioned to continue into the next year especially in the light of the succeeding plans for the improvement of NIP.

B. Plans

The plans include the construction of a NIP Extension already submitted to the Office of the Chancellor. Two schemes for the Extension were originally drawn and presented: the first one affecting the front part of Llamas Hall facing Quirino Ave. (See Figs. 1 A-E), while the second scheme looked into constructing the Extension on the side facing the Inst. of Chemistry Bldg. (See Figs. 2 A-D). Both plans were presented to the Executive Committee and consequently, the second scheme was endorsed to the Office of the Chancellor for request of funds. The proposed structure, roughly estimated at P 12.12M, is to house an additional big lecture hall, two more recitation rooms and two lab areas that would be devoted either to teaching or research. This structure runs parallel to the existing Senior Faculty Wing with the lecture rooms and labs

all on he second floor. The ground floor area is existing as part of the Machine Shop and any additional covering resulting from the provision of the second floor will be used in the ground floor as holding area for old equipment or a small semi-outdoor area for NIP functions and activities.

Recently however, some movement has been seen concerning the reactivation of the construction of the New NIP Building along C.P. Garcia Avenue. The Contractor's reports on the completion of Phase 1 are now being processed and reviewed prior to final payment. The construction of the New NIP Bldg. formally started on June 05, 1996. Descriptively, Phase 1 has been able to accomplish the structural foundation of one of the research wings (East Wing nearest Regidor Street), the provision of the basement floor and the slab and reinforcing bars in preparation for the ground floor level. Included also are the plumbing systems for the basement and partially for the ground level, and the electrical wirings for the basement level. The condition of the accomplished works however is of a 'very rough finish'. Phase 1 has a Contract for Construction amounting to P 14.82M exclusive of administrative costs (See Appendix FR-1). A brief history of the construction of Phase 1 is provided with this report (See Appendix FR-2).

A restart of construction may take the place of a NIP Extension. During a meeting with Chancellor Roman early January 2001, it was disclosed that an amount of P 30M would likely be made available for the next phase of the New NIP Building. In line with this, the Deputy Director for Facilities and Resources will be coordinating with the architect to modify the plans in order to fit the budget and to ensure a viable academically operating unit at the site of the New NIP Building. The plans will be consulted with the Director and the other Deputy Directors and will be discussed and presented accordingly to the NIP Executive Committee.

In close coordination with the Office of the Campus Architect, plans for the improvement of the male and female toilet facilities have also been drawn-up (See Appendix FR-3). The proposed improvement roughly estimated at P 1.16M is designed to provide equal toilet and shower facilities for both male and female users utilizing both floors of NIP. These plans have also been forwarded to the Office of the Chancellor.

Late 2000, the Committee saw itself engaged in activities related to building utilities. Firstly, the main water supply system, which the NIP shares with the Institute of Chemistry and the Institute of Biology, is to be made individual. Discussion with the CMO and Manila Water were held wherein NIP stressed on the minimum disruption during the implementation. The NIP has started to inspect its old water tank system as probable fallback mechanism.

Secondly, NIP has made links with Meralco concerning its existing main feed line. Complaints on the instability of current which may affect the experiments have been expressed and this has been attributed to that the feed lines of NIP are outdated. The NIP is currently assessing its total consumption as input for an application of a new feed line. Finally, a university-wide garbage disposal scheme is being started. NIP has made representation to the concerned Task Force on personnel to be trained in composting. NIP is planning to start an in-house garbage segregation scheme. In addition, concerns for the proper handling of chemical waste have been brought to light and an initial step towards awareness and implementation is planned in the form of a Seminar on this topic with an invited resource person as speaker. This is to be coursed through the physics student association since most of them would be working with chemicals in their research studies.

IV. Report of the Deputy Director on Research and Extensions

by *Arnel Salvador*

The research laboratories of the NIP continued to grow in terms of external funding and research outputs. For the year 2000, there were 15 research grants initiated in the year 2000 with a total funding of PhP 17,705,000.00 . In contrast for the year 1999-2000 there were 9 completed research grants with a total funding of PhP 14,209,605.10. The number of papers authored by NIP faculty and published in ISSI journals for the year 2000 totals 18 and there has also been a corresponding increase in NIP's participation at international conferences. A listing of the research grants and outputs is provided below to give a more relevant and pertinent description of the research laboratories.

With the continued expansion of the research laboratories, one issue that needs to be tackled is the financial support given by the University. While the external funding of the research laboratories has dramatically increased over the past four years, the counterpart support from the University has remained stagnant for the past ten years at roughly P80,000 per laboratory. With the outputs mentioned above, and considering that the bulk of externally funded grants were allotted for the purchase of equipment and supplies, the Institute has asked the University administration for a corresponding increase in financial support for the operation of the research laboratories.

Another issue which has confronted the research laboratories is the taxation of imported equipment and supplies. Often the taxes (VAT, customs and duties taxes) reach as high as 15 % of the cost of the equipment. These amounts are considerable and has been found to severely burden the financial resources of the laboratories. The University administration has offered their help in shouldering some of these taxes . At the same time the University is asking the government, BIR in particular, for an exemption from these taxes.

The institute has also seen a noticeable increase in its collaboration and extension work with the private industry as well as other research laboratories outside of NIP. Various firms have regularly availed of the Institute's technical opinion and use of its facilities for material analysis as well as manpower development. As part of its mandate to provide extension services the Institute looks forward to its role as an active partner with the private industry. To facilitate these collaborations the institute has developed guidelines for the use of its equipment. The executive council of the institute has agreed that all payments for the use of its equipment/facilities be coursed either through the Diliman Science Foundation or the Philippine Physics Foundation. A detailed description of the guidelines is attached in Appendix E.

Appendix

A1. Publications ISI-abstracted Journals

1. **V. Daria** and **C. Saloma**, "High-accuracy Fourier transform interferometry without oversampling by a 1-bit analog-to-digital converter", Appl Opt 39, pp. 108-113 (2000)

2. **F. Domingo** and **C. Saloma**, "Phase transitions in the confined growth of chains formed by self-avoiding hard spheres," Physica D, Vol 141, pp. 80 - 90 (2000)

3. **M. Lim**, G. Narisma, and **C. Saloma**, "Spectral extrapolation by simplex projection," Opt Commun 176, pp. 373-385 (2000)

4. C. Palmes-Saloma and **C. Saloma**, "Long-depth imaging of specific gene expressions in wholemount mouse embryos with single photon excitation confocal fluorescence microscope and FISH," J. Struct. Biol. 131, pp. 56-66 (2000)

5. **C.M. Blanca** and **C. Saloma**, "Third harmonic generation microscopy in highly-scattering media," Appl. Opt. 39, pp. 5187 - 5193 (2000)

6. **V.R. Daria**, **C. Saloma**, and S. Kawata, "Excitation with a focused pulsed optical beam in scattering media: diffraction effects," Appl. Opt. 39, pp. 5244 - 5255 (2000)

7. M. Cambaliza and **C. Saloma**, "Advantages of two-color excitation fluorescence microscopy with two confocal excitation beams," Opt Commun 184/1-4, pp. 25-35 (2000)

8. **M. Lim** and **C. Saloma**, "Enhancement of low-resolution Raman spectra by simplex projection," Opt. Commun. 186/4-6, pp. 237-243(2000).

9. **Y. Abate** and **H. Ramos**, "Optimization and enhancement of H- ions in a magnetized sheet plasma," Rev. Sci. Instrum 71/10, p. 3689 (2000)

10. **J. Magpantay**, "The Parisi-Sourlas Mechanism in Yang--Mills Theory?, " Int. J. Mod. Phys. A 15/11, p. 1613 (2000)

11. **D. Yanga** and A. Morales, "A Different Theoretical Approach to the Spin Polaron Problem," J. Superconductivity: Incorporating Novel Magnetism 13/6, p. 929 (2000).

12. B. Kniehl, **C. Palisoc** and A. Sirlin, "Higgs-Boson Production and Decay Close to Thresholds," Nucl. Phys. B 591 (2000)

13. S. Seto, K. Suzuki, **V.N. Abastillas, Jr**., and K. Inabe, "Compensating Related Defects in In-Doped Bulk CdTe," J. Crystal Growth 214/215 (2000) 974 - 978

14. **M. Cruz, K. Molina, A. Salvador** and **R. Sarmago**, "Growth of Superconducting Bi2Sr2CaCu2O8+d Single Crystals form a (KCL-bi2O3) flux," Physica C 341-348, pp. 539-540 (2000).

15. **D. Yanga** and A. Morales, "The Finite Temperature Green's Function Method for the Spin Polarion Problem," Physica C 341-348, pp. 147-148 (2000)

16. **J. Amistoso**, S. Kawata, "Characterization of Organic Photochromic Materials as 3-D Optical Data Storage Media," Mol. Cryst. Liq. Cryst 344, pp. 23 - 30 (2000)

A2. Presentations in International Conferences

a. 6th International Conference of materials and mechanisms in High Temperature Superconductivity (M2S-HTSC) Houston, Texas, U.S.A. Febuary 2000
1. M. M. Cruz, K. L. Molina, A. A. Salvador and R. V. Sarmago, "High qaulity singel crystals of Bi-2212 via flux growth".
2. L. J. D. Guerra, M. M. Reyes, A. H. G. Manuel, R. V. Sarmago and A. A. Salvador, " Evidence of a normal state psuedogap in the tunneling spectrum of bulk Bi-2212 tunneling junction".

b. Focus on Microscopy 2000 FOM 2000, April 9-13, Japan
1. M. Lim, C. Saloma , "Raman spectrum enhancement by simplex projection".
2. V. Daria, C.Saloma, S. Kawata, "Diffraction effects in focused pulse light propagation through higly-scattering media: modified Monte carlo modelling".
3. C. Blanca, J. Bantang, C. Saloma, " Diffraction effects in light propagation through a highly scattering medium "

c. Regional Meeting on Plasma Research in the 21st Century, Bangkok, May 7-12, 2000
1. Y. Abate and H. Ramos, "Optimization and enhancement of H^- production in magnetized sheet plasma source".
2. N. Valmoria and H. Ramos, "Thin film deposition of ZrN using plasma sputter-type negative ion source".
3. H. Ramos, "Present status of the surface modification and thin film formation technologies in the Philippines".

d. 7th Asia-Pacific Electron Microscopy Conference (Physical Sciences), June 26-30, 2000, Singapore
1. N. Valmoria, M. G. Mena and H.J. Ramos, "Synthesis of ZrN film via the Plasma sputter-type Negative Ion Source".
2. L.J. D. Guerra, M.M. Cruz, A. H. G. Manuel, R. V. Sarmago, "Evidence of parallel growth in Bi-2212 single crystals grown froma KCl-Bi_2O_3 flux".

e. 18th International Liquid Crystal Conference, Sendai, Japan 24-28 , July 2000
1. L. Davila, L. Cada and Z. Domingo, "Effect of the degree of the polymerization on the induced alignment of a nematic liquid crystal ".
2. R. C. Gutierez, C. M. Y. Blanca, Z. Domingo, "Electrically tunable optical filter for visible wavelength using a liquid crystal ".
3. A. Tumbokon, A. Cruz, L. Cada and Z. Domingo, " Synthesis and characterization of canola-based cholesteryl ester and nematic E7 mixture".
4. S. F. Delica, M. Estonactoc, M. C. Micaller, L. Cada and Z. Domingo " Phase Diagram of Binary Mixture of E7:TM74A Liquid crystals".
5.C. L. Mahinay, C. Macale, F. Amos, L. Cada and Z. Domingo , " Electro-optical characterization of E48:PVP polymer dispersed liquid crystals".
6. M. C. Micaller, L. Cada and Z. Domingo , " Molecular Imprinting in Polymer Stabilized Liquid crystal

f. 8th Asia-Pacific Physics Conference Academia Sinica , Aug 7-11, Taiwan
1. G. Tapang, C.Saloma, ".Spatial resolution in photon-limited confocal microscopy"

g. 15th International Conference on Pattern Recognition , ICPR2000, Sep3-7, Spain
1. M. Soriano, B. Martinkauppi, S. Huovinen, M. Laaksonen, " Skin detection in video under changing illumination conditions".

2. T. Ojala, M. Pietikainen & M. Soriano, "Robust texture classification by subsets of Local Binary Patterns".

h. Real-time Image Sequence Analysis (RISA2000, Aug.31-Sep.1, Finland) –
1. M. Soriano, B. Martinkauppi, S.Huovinen, M. Laaksonen., "Skin color modelling under varying illumination conditions using the skin locus for selecting training pixels".

A3. Presentations in National Conference Proceedings

1. R. Amor, D. Palima, M. Daza and Z. Domingo, "Space charge field generation and thermal effect in a dye-doped twisted nematic liquid crystal cell," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 7
2. C. de la Cruz, L. Guerra, R. Sarmago, and A. Salvador, "Mechanism of Flux-flow Activation in C-axis oriented $Bi_2Sr_2CaCu_2O_{8+d}$ Thin Films," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 10
3. E. Estacio, M. Bailon, A. Somintac, and A.Salvador, "Measurement of Junction Electric Field in an MBE-Grown Modulation-doped GaAs/AlGaAs Heterostructure by Photoreflectance Spectroscopy," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p.13
4. A. Tumbokon, A. Cruz, F. Amos, L. Cada, and Z. Domingo, "Synthesis of Cholesteryl Ester and Study on the Induced Chirality in Its Formulation with a Nematic Liquid Crystal," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 22
5. F. Amos, Z. Domingo and L. Cada, "Liquid Crystalline Properties of Chloropromazine-doped Erythrocyte Lipids," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 25
6. I. Santos, A. Salvador and R. Sarmago, "Growth of c-axis oriented superconducting $Bi_2Sr_2CaCu_2O_{8+d}$ films suitable for device fabrication," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 28
7. V. Abellana, R. Manay and R. Sarmago, "Silicon Nitride (SiN_xH_y) by Plasma-Enhanced Chemical Vapor Deposition," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 34
8. J. Laniog, K. Bautista, M. Patricio, R. Sarmago and A. Salvador, "Liquid Phase Epitaxy of Sn-doped GaAs," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 40
9. L. Davila, D Palima, Z. Domingo and L. Cada, "Effect of the Degree of Imidization on the Pretilt Angle of Nematic Liquid Crystal E7," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 43
10. C. Macale, F. Amos, L. Cada and Z. Domingo, "Phase Transitions in Egg Phosphatidylcholine," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 46
11. V.A. Innis, F. Amos and Z. Domingo, "Physical Characterization of the Liquid Crystalline Properties of Isolated Normal Mitochondria in Brain Cells of Mice," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 49
12. R. guerrero, Y. Villanueva and M.R. Daza, "Optical data encryption in a photorefractive crystal," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 52
13. M. Hui, M. Baclayon, J. Amistoso and W. Garcia, "Temporal Evolution of the Electron Temperature and Density in a 1064-nm Nd:YAG Laser Produced Copper Plasma," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 55

14. V. De Villa, E. Casulla, J. Tio, and M.R. Daza, "Fluorescence of Erbium-doped Silicate Glasses," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 64
15. P. Parañal, J. Borja, L. Romaguera, M.R. Daza, "Measuring Displacements Using Digital Speckle Pattern Interferometry," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 67
16. Y. Abate, M. Arciaga and H. Ramos, "Density Measurements of Negative Hydrogen Ions Using Mass Spectrometer," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 70
17. J. Palero, J. Amistoso, M. Baclayon, and W. Garcia, "Generation of UV, VIS, and NIR Laser Light by Stimulated Raman Scattering in Hydrogen with a Pulsed 355-nm Nd:YAG Laser," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 73
18. N.A. Lacap, E. Estacio, A. Podpod and A. Salvador, "Photocurrent Spectroscopy of a resonant cavity enhanced photodetector," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 76
19. O. Santillan, A. Mendenilla, and H. Ramos, "Effect of an Extractor Electrode on Ion Beam Focusing in a Plasma Sputter-Type Negative Ion Source," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 79
20. A. Mendenilla and H. Ramos, "Zr/ZrN Negative Ion Formation from a Multi-cusp Ion Source," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 82
21. C.Ison, E. Estacio, J. Laniog, A. Salvador, "Time-Resolved Photocurrent Spectroscopy of an LPE-Grown GaAs/AlGaAs Heterojunction Device," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 85
22. A. Francia, N. Hermosa and Z Domingo, "Holographic Grating in Methyl Red Doped Polymer Dispersed Liquid Crystals," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 88
23. M. Sasao , M. Nishiura, M. Hamabe, M. Wada, T. Kuroda, S. Guharayand H. Ramos, "Space Charge Effect on the Transport of a High-Perveance He^+ Beam," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 91
24. G. Blantocas and H. Ramos, "Focus on Streaming Instability as a Probable Cause of Dispersion in the Sheet Plasma Negative Ion Source," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 94
25. D. Palima, J. Gabayno and M.R.Daza, "Study of dynamic gratings in methyl-red doped nematic liquid crystal E7-using polarized pump-probe technique," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 97
26. A. Somintac, R. Sarmiento, L. Guiao and A. Salvador, "Report on the Initial Growth of GaAs and AlGaAs via Molecular Beam Epitaxy," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 106
27. D. Palima, J. Gabayno, R. Amor, M.R. Daza, "Simultaneous determination of the spatial variation in the pretilt angle and thickness of a liquid crystal cell using the crystal rotation method," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 109
28. J. Laniog, K. Bautista, M. Patricio, E. Estacio, R. Sarmago and A. Salvador, "Electrical and Optical Characterization of $Al_xGa_{1-x}As$/GaAs P-n Junctions Grown via Liquid Phase Epitaxy," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 102
29. R. Gutierrez, M. Vasquez, R. Sarmago, "Preparation of Bi-2223 from Bi-2201 and Ca_2CuO_3-CuO Conglomerate Precursors via Solid-State Reaction," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 105

30. G. Malapit, A. Mendenilla, A. Montecillo, A. Ubarro and H. Ramos, "Growth of Uniform Diamond-like Carbon Thin Films," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 108
31. M.S. Marcos, M. Soriano, W. Oblefias and C. Saloma, "Color-texture image analysis of coral reefs," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 113
32. D.E. Juanico, C. Monterola and C. Saloma, "Learning Capability of a Bifurcated Neural Network," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 128
33. G. Tapang and C. Saloma, "Spatial Resolution of Weakly-Reflecting Objects in Confocal Optical Microscopy," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 137
34. S. Delica and C. Blanca, "Multiple Light Scattering in Polymer Dispersed Liquid Crystals: A Monte Carlo Simulation," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 140
35. R. Isip, M. Manuel, M. Daza, "Signal Analysis of Self-Pulsating Semiconductor Lasers," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 143
36. C.A. Alonzo and M.R. Daza, "Comparison of Iterative Fourier Transform and Simulated Annealing Pulse-Retrieval Algorithms for Frequency-Resolved Optical Gating," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 146
37. J. Bantang, C.M. Blanca and C. Saloma, "Monte Carlo model of turbid media with mixed scatterers," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 155
38. F. Domingo and H. Ramos, Numerical Solution for the Time Evolution of a Periodic Acceleration Field in a Plasma System," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 158
39. T. Ichimura, C.M. Blanca and C Saloma, "Monte Carlo Evaluation of Focus Shift and PSF Distortion in the Presence of Refractive Index Mismatch in Scattering Media," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 161
40. M. Quito, C. Monterola and C. Saloma, "Solving the N-body Gravitational Problem by Neural Networks," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 167
41. C. Monterola and C. Saloma, "Accuracy of a Neural Network Differential Equation Solver," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 170
42. M. Lim and C. Saloma, "Modeling the Effects of Diversity in Freshwater Microscopic Ecosystems," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 173
43. V. Daria, S. Kawata and C. Saloma, "Numerical analysis of the imaging properties of nonlinear microscopy in highly scattering media," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 176
44. B. Kniehl and C. Palisoc, "Unstable Loop Particle Treatment of Threshold Singularities in Higgs Boson Production and Decay," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 179
45. E. Galapon, "The Time of Arrival Quantum Classical Correspondence Problem," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 182
46. N. Caroy and J.P. Esguerra, "Thermodynamics of a One-Dimensional Gravitational Gas (1DGG) in a Uniform External Field," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 188

47. L. Jirkovsky and L. Bo-ot, "Derivation of Third Order MHD Equations," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 191
48. L. Chan, "Projection Operator Proof of Bloch's Theorem," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 194
49. M. Escobido, "Explicit Path Integration in Rayleigh Diffusion Process," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 197
50. R. Guerrero, Y.Villanueva and M.R. Daza, "Optical data encryption in a photorefractive crystal," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 206
51. N. Hermosa and M. R. Daza, "All-optical dynamic filtering using nematic liquid crystal," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 218
52. P. Almoro, M. Morales and M. Daza, "Optical Pattern Recognition Using Holographic Films," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 221
53. A. Mendenilla, M.G. Cardinal, R. Awayan, G. Blantocas, M. Macandog, H. Ramos and M. Wada, "A New Compact Mass Analyzer for Extracting H- in a Magnetized Sheet Plasma," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 227
54. P.J. Rodrigo, M. Lim, and C. Saloma, "Optical-feedback semiconductor laser Michelson interferometer," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 230
55. D. Te, B. Buenaobra, V. Daria and C. Saloma, "Performance of a Confocal Laser Scanning Microscope," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 233
56. M. Baclayon , J. Palero, M.R. Daza, and W. Garcia Stokes Pulse Shapes in Steady-State Stimulated Raman Scattering in Hydrogen," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 248
57. C. Mahinay, L. Davila, M.C. Micaller, L. Cada and Z. Domingo, "Electro-optic Characterization of Photopolymerization Induced Polymer Dispersed Cholesteric Liquid Crystals," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 254
58. M. Patricio, M. Estonactoc, D. Palima and G. Tapang, "Student and Teacher Views on Reforms in Teaching Methods in Introductory Physics," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 266
59. C. Monterola, M. Lim, J. Garcia and C. Saloma, "Forecasting the Dynamics of the Undecided Population in a Public Opinion Poll: A Neural Network Approach," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 281
60. J. Palero and W. Garcia, "Temporal Behavior of the Stokes and Anti-Stokes Lines Generated by Stimulated Raman Scattering in a High-Pressure Hydrogen Raman Shifter," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 284

61. A. Palonpon, M. Daza and C. Saloma, "Self-induced Transparency with Focused Light Pulses," Proc. 18th SPP Physics Congress (Samahang Pisika ng Pilipinas, 27-29 October 2000, Puerto Princesa, Palawan) p. 287

B1. List of CHED-Funded Travel Grants

Name	Conference	Date	Funding
Roland V. Sarmago	6th International Conference, Materials and Mechanisms of Superconductivity and High Temperature Superconductors, Houston, Texas, USA	19-26 February 2000	$2,650.00
Danilo M. Yanga	6th International Conference, Materials and Mechanisms of Superconductivity and High Temperature Superconductors, Houston, Texas, USA	19-26 February 2000	$3,414.00
Caesar A. Saloma	International Conference on Focus on Microscopy 2000, Shirahama, Japan	8-14 April 2000	$2,700.00
May T. Lim	International Conference on Focus on Microscopy 2000, Shirahama, Japan	8-14 April 2000	$2,500.00
Carlo Mar Y. Blanca	International Conference on Focus on Microscopy 2000, Shirahama, Japan	8-14 April 2000	$2,500.00
Henry J. Ramos	Regional Conference on Plasma Research in the 21st Century, Bangkok, Thailand	6-13 May 2000	$1,045.00
Yohannes Abate	Regional Conference on Plasma Research in the 21st Century, Bangkok, Thailand	6-13 May 2000	$1,130.00
Ludek Jirkovsky	Regional Conference on Plasma Research in the 21st Century, Bangkok, Thailand	6-13 May 2000	$ 50.00
Eric A. Galapon	International Conference in Quantum Optics and VIII Seminar in Quantum Optics in, Minsk, Belarus	27 May – 01 June 2000	$2,064.00
Zenaida B. Domingo	18th International Liquid Crystal Conference (ILCC), Sendai, Japan	23-29 July 2000	$2,690.00
Liza T. Davila	18th International Liquid Crystal Conference (ILCC), Sendai, Japan	23-29 July 2000	$1,880.00
Rommel C. Gutierrez	18th International Liquid Crystal Conference (ILCC), Sendai, Japan	23-29 July 2000	$2,270.00
Luis Ma. T. Bo-ot	8th Asia Pacific Physics Conference, Taipe, Taiwan	6-11 August 2000	$1,332.00
Giovanni A. Tapang	8th Asia Pacific Physics Conference, Taipe, Taiwan	7-11 August 2000	$1,444.00

B2. International Conferences Attended by NIP Faculty

Name	Conference	Place	Date
Danilo M. Yanga Roland V. Sarmago	6th International Confe-rence on Materials and Mechanisms of Super-conductivity and High-Temperature Supercon-ductors	Houston, Texas	19-26 February 2000
Caesar A. Saloma May T. Lim Carlo Mar Y. Blanca	International Conference on Focus on Microscopy 2000	Shirahama, Japan	8 to 14 April 2000
Yohannes Abate Ludek Jirkovsky Henry J. Ramos	Regional Conference on Plasma Research in the 21st Century	Bangkok, Thailand	6-12 May 2000
Eric A. Galapon	International Confe-rence in Quantum Optics and VIII Seminar in Quantum Optics	Minsk, Belaru	27 May to 01 June 2000
Zenaida B. Domingo Liza T. Davila Rommel C. Gutierrez	18th International Liquid Crystal Conference (ILCC)	Sendai, Japan	23 to 29 July 2000
Luis Ma. T. Bo-ot Giovanni A. Tapang	8th Asia-Pacific Physics Conference (APPC 2000)	Taipe, Taiwan	6 to 11 August 2000
Jose A. Magpantay	World Intellectual Property Organization Meeting	Phuket, Thailand	28 August to 01 September 2000
Maricor N. Soriano	Real-Time Image Sequence Analysis (RISA 2000) 15th International Conference on Pattern Recognition (ICPR 2000)	Oulu, Finland Barcelona, Spain	28 August to 11 September 2000
Jose Omar Amistoso	International Symposium on Optical Data Storage 2000	Hokkaido, Japan	29 August to 11 September 2000
Danilo M. Yanga	1st Biological Physics Conference at Chulalongkorn University	Bangkok, Thailand	18-22 September 2000

C. Official Visitors of NIP

NAME	DEPARTMENT	DATE
1. Dr. Barry Standsfield	INRS, Universite du Quebec Varennes, Quebec, Canada	January 25-27, 2000
2. Dr. Bernd A. Kniehl	II. Institute for Theoretical Physics, University of Hamburg, Germany	April 2-11, 2000
2. Dr. Mamiko Sasao	National Institute for Fusion Science, NIFS, Nagoya, Japan	October 26-31, 2000

D. List of Research Grants

I. Summary

Year 1999-2000
Total PhP 14,209,605.10
Funding sources

University of the Philippines/OVCRD	PhP	514,950
Department of Science & Technology/GIA		6,624,655.00
Department of Science & Technology /PCASTRD		6,700,000
Foreign (Third World Academy of Science)		400,000 ($8,000)

Year 2000-2001
Total PhP17,705,000.00
Funding sources

University of the Philippines/OVCRD	396,500
Department of Science & Technology/GIA	7,200,000
Department of Science & Technology /PCASTRD	6,987,500
National Research Council of the Philippines	99,000
Commission on Higher Education	3,022,000

II. List of NIP funded research grants and their corresponding funding sources

YEAR 1999-2000

CONDENSED MATTER PHYSICS LABORATORY

1. Project Title: MBE growth of InGaAsP and InGaAs optoelectronic devices for fiber optic communications: Year II
Funding Agency: DOST/PCSASTRD
Funding Cost: PhP 6,500,000
Proponent: Dr. Arnel Salvador

2. Project Title: Surface electric field measurement of GaAs by photoreflectance spectroscopy Funding Agency: UP/OVCRD
Funding Cost: PHP 160,000
Proponent: Dr. Arnel Salvador

INSTRUMENTATION PHYSICS LABORATORY

Project Title: Construction of a laser scanning fluorescence confocal microscope
Funding Agency: Third World Academy of Science
Funding Cost: US$8,000
Proponent: Dr. Caesar Saloma

LIQUID CRYSTALS LABORATORY

1. Project Title: Investigation of the wavelength dependence of the laser-induced optical reorientation in azo dye-doped nematic liquid crystals
Funding Agency:
Funding Cost:
Proponent: Dr. Zenaida Domingo

PHOTONICS RESEARH LABORATORY

Project Title: Institutional build up grant
Funding Agency: DOST/PCASTRD
Funding Cost: PhP 200,000
Proponent: Dr. Marlon Daza

PLASMA PHYSICS LABORATORY

1.Project Title: Prototype Plasma devices for Industrial Applications
Funding Agency: DOST/GIA
Funding Cost: PhP 6,624,655.00
Proponent: Dr. Henry Ramos

2. Project Title: Synthesis of diamond and diamond-like carbon thin films
Funding Agency: UP/OVCRD
Funding Cost : PhP 179,000
Proponent: Dr. Henry Ramos

THEORETICAL PHYSICS GROUP

1. Project Title: Threshold singularities in Higgs Boson Production and Decay
Funding Agency: UP/OVCRD
Funding Cost: PhP 60,000
Proponent: Dr. Caesar Palisoc

2. Project Title: Direct nth order diagrams in bound state perturbation theory
Funding Agency: UP/OVCRD
Funding Cost: PhP 85,950
Proponent: Dr. Lorenzo Chan

YEAR 2000-2001

CONDENSED MATTER PHYSICS LABORATORY

1.Project Title: MBE growth of InGaAsP and InGaAs optoelectronic devices for fiber optic communication :Year III
Funding Source: DOST/PCASTRD
Funding Cost: PhP 5,000,000
Proponent: Dr. Arnel Salvador

INSTRUMENTATION PHYSICS LABORATORY

1.Project Title: Optical Imaging Through a Scattering Medium With High Power Strongly Focused Pulsed Laser Beam
Funding Source : Commission on Higher Education (CHED)
Funding Cost: PhP 2,822,000
Proponent: Dr. Caesar Saloma

2. Project Title : Growth of Multicellular Dissipative Systems
Funding Agency: CHED
Funding Cost : PhP 100,000
Proponent: Dr. Caesar Saloma

3. Project Title: Behavior of multilane vehicular traffic with a large speed distribution
Funding Agency: CHED
Funding Cost: PhP 100,000
Proponent: Dr. Caesar Saloma

4.Project Title: Design of a Laser Scanning Confocal Microscope for Three-Dimensional Observation of Thick Biological Samples
Funding Agency: UP/OVCRD
Funding Cost: PhP 166,500
Proponent: Dr. Vincent Daria

5.Project Title: Color-Texture Image Analysis of Coral Reefs from Underwater Video
Funding Agency : UP/OVCRD
Funding Cost: PhP 100,000.00
Proponent : Dr. Maricor Soriano

LIQUID CRYSTAL LABORATORY

1. Project Title: Effect of the degree of polymerization of polyimide on the induced alignment of nematic liquid crystal
Funding Agency: UP/OVCRD
Funding Cost
Proponent : Dr. Zenaida Domingo

2. Project Title: Phase transition of lecithin-water systems through spectroscopic and calorimetric techniques
Funding Agency: Jessie Brown Grant
Funding Cost: USD10,000
Proponent: Dr. Zenaida Domingo

PLASMA PHYSICS LABORATORY

Project Title: Plasma devices for industrial applications
Funding Agency: DOST/GIA
Funding Cost: PhP 7,200,000
Proponent: Dr. Henry Ramos

PHOTONICS RESEARCH LABORATORY

1 Project Title: Institutional Build-up Grant
Funding Agency: DOST/PCASTRD
Funding Cost: PhP 687,500
Proponent: Dr. Marlon Daza

2.Project Title: Pulsed Laser Deposition of Titanium Nitride on Silicon
Funding Agency: DOST/PCASTRD
Funding Cost: PhP 1,300,000
Proponent: Mr. Wilson Garcia

THEORETICAL PHYSICS GROUP

1.Project Title: Unresolved issues concerning the Higgs-Boson mass and width defined in the complex pole and on-shell frameworks
Funding Agency: UP/OVCRD
Funding Cost: PhP 60,000
Proponent: Dr. Caesar Palisoc

2.Project Title: Contribution to the statistical mechanics of classical many body system"
Funding Agency: UP/OVCRD
Funding Cost: PhP 30,000
Proponent: Mr. Jose Perico Esguerra

3. Project Title: Fredholm integral operator representation of time operators
Funding Agency: NRCP
Funding Cost: PhP 99,000
Proponent: Mr. Eric Galapon

4. Project Title: Projection Operator proof of Bloch theorem
Funding Agency: UP/OVCRD
Funding Cost: PhP 40,000
Proponent: Dr. Lorenzo Chan

E. Guidelines for the Use of NIP Equipment

1. Payments for the use of NIP equipment shall be made in the name of Diliman Science Foundation (DSF)
2. DSF will deposit the payments in the NIP account of DSF.
3. The laboratory where the equipment is assigned can request DSF to remit to the laboratory up to 90 % of the payment
4. The written request has to be signed by the NIP Director.
5. All cash advances have to be liquidated by the laboratory.
6. At the end of the year, DSF will remit to NIP 6% of the total payments covered by the rental/use of NIP equipment.

Guidelines for the use of NIP research laboratories for training, manpower development of private firms.

1. Training/ seminars conducted by the research laboratory which will entail the use of the laboratories facilities will be coursed through the Philippine Physics Foundation.
2. The cost for the use of NIP facility will include the appropriate insurance/repair cost should the equipment be broken during the training .
3. Payments for the use of NIP facilities will be in the name of Philippine Physics Foundation
4. PPF will keep an account for NIP for the purposes above
5. NIP can remit up to 90 % of the payments of which 70% will go to the laboratory and the remainder assigned to NIP
6. All cash advances, remittance has to be liquidated.

F. Guidelines for the Use of CHED-NIP Center Of Excellence Funds For Paper Presentation in International Conferences (Approved by the NIP Executive Council in a Meeting on 3 August 2000)

Because the allotted budget for conference presentation in the CHED-NIP CoE Project is limited, the following guidelines shall be followed with regards to the use of such funds by qualified NIP personnel:

1. Poster presentation in an international conference is funded only during the first grant application. Succeeding applications by the same applicant shall consider only oral presentations.

2. The value of the travel grant shall not exceed USD2,500.00.

End of Report