Annual Report for the Year 2002

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

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Chapter I. Executive Summary

by *Caesar Saloma*

A. Introduction

This annual report is the third under my current term as Director of Institute which began on June 1, 2000 and is scheduled to end on 31 May 2003. The previous two reports were released in the first month of 2001 and 2002, respectively. Both documents could be accessed at the official website (www.nip.upd.edu.ph) of the National Institute of Physics (NIP).

The NIP was established by President Ferdinand E. Marcos via the issuance of Executive Order 889 in 1983. It started operation as an institute on 26 May 1983 immediately after the approval of Board of Regents of the University of the Philippines (UP).

Originally formulated in 1983, the *mission* of NIP is to serve as the national center of excellence for the acquisition, dissemination and application of knowledge in physics and applied physics. The current preeminent position of NIP among the various schools of physics that are offering undergraduate and graduate programs in physics and applied physics in the Philippines, indicates that the mission has been largely fulfilled.

Eighty-six percent (86%) of all Philippine-affiliated physics publications in ISI-abstracted journals between 1993 and 2002, has been produced by NIP-affiliated researchers. NIP is one of the only two (the other is the Marine Science Institute, UP Diliman) academic units in the Philippines, that requires the acceptance of one paper in an ISI journal before a PhD student is permitted to defend her PhD dissertation. A all-time record of 27 ISI papers were published by NIP researchers in 2002. In June 2002, the Philippines entered the rankings of countries with the highest citations in physics (http://in-cites.com/newentrants/june2002.html). A country is included in the rankings if it is in the top 50% by total citations in a given field

Our *vision* is to make NIP into one of the best schools of physics in the ASEAN by the year 2005. This vision was formulated during a faculty development workshop that was conducted on August 17-19, 2002 at the UP Bolinao Marine Laboratory of the Marine Science Institute in Bolinao, Pangasinan. The workshop was participated by twent y-two NIP faculty members (17 out of 19 PhD's, 4 Instructors 7, 1 University Researcher) and the NIP administrative officer.

The realization of our vision will strongly depend upon the ability of NIP faculty and research staff to respond to the following challenges that they are facing: 1) To publish in ISI journals with high impact factors, 2) To elicit high-citation rates of previously-published works, 3) To increase graduation rates for BS Physics and BS Applied Physics students (currently at 20% or less, of freshman class), 4) To obtain international patents, 5) To get appointed to editorial boards of ISI journals, and 6) To speak in high-caliber scientific conferences.

Crucial to the successful pursuit of the vision is the ability of NIP researchers to secure additional research funds from external sources to support the acquisition of new research equipment and tools. External funds are also needed to supplement the meager budget that is allotted to NIP for maintenance, operations and other expenses (MOOE). In the past, research support have mostly come from government agencies such as the Philippine Council for Advanced Science and Technology Research and Development (PCASTRD), Commission on Higher Education (CHED), National

Research Council of the Philippines (NRCP), and the Office of the Vice-Chancellor for Research and Development, UP Diliman (OVCRD). While most of the research funds is expected to remain mostly public in the foreseeable future, NIP researchers must gain the confidence of the private sector and obtain financial support in terms of research grants and equipment donation. In the year 2002, the NIP has been able to obtain financial support from *Intel Philippines* in the form of research grants and research equipment donation in the amount of USD 150000.

For the first time, NIP researchers filed three international patents in 2002 for techniques that were developed in the Plasma Physics and Instrumentation Physics laboratories. These patents covered techniques that were developed to form titanium nitride films, to detect defects in integrated circuits using confocal reflectance microscopy and 1P-OBIC imaging, and two-color (two-photon) excitation with a Raman shifter.

Construction of the new NIP building along CP Garcia Avenue has finally resumed in the last week of November 2002, after several years of technical, legal and financial disputations. The new NIP building consists of three mains sectors (wings) namely; research, faculty and administration and lecture halls. It has a total floor area of 13,914 square meters (area of old NIP building in 3rd Pavilion of Llamas Hall is approximately 4,000 square meters) and is estimated to cost about PhP 208,710,000 (@ PhP 15,000 per square meter). The building is being designed by Architect Francisco Nakpil & Associates who also serve as consultants in the construction phase.

In the late 2000, UPD Chancellor Emerlinda Roman allotted a budget of PhP 30.2M for the resumption of construction. It took almost two years to resolve and clarify the various issues affecting the previous building contract that involved the University, the Commission on Audit and Architect Nakpil, before awarding building construction to NEWCO Builders and Development Corporation which submitted a winning (lowest) bid of PhP 19,376,000.00. The pre-determined scope of work (called Phase II) involves the completion of the first two floors of the Research Wing of the new NIP building. Completion of construction works is expected in September 2003.

After deducting other expenses related to project administration and consultation services, a balance of PhP 8.586M remains available from the original budget. Chancellor Roman has approved the NIP requests to use the excess amount to carry-out additional construction works that include the construction of the structural framework of the succeeding (3rd) floor of the Research Wing and some site development preferably the fencing of the new NIP building complex.

The first two floors of the Research Wing will house the Plasma Research Laboratory, the expanded Liquid Crystal Laboratory and all the teaching laboratories of NIP including the Physics 7X.1 classes in the service courses for other science and engineering students.

President Francisco Nemenzo, Jr in his efforts to modernize the facilities of the University, awarded an equipment grant to NIP in the amount of PhP 18M. The grant was used to acquire: 1) Femtosecond laser system (PhP 12M), 2) High-field Hall facility (PhP 2M), 3) Electro-optic facility (PhP 1M), 4) ECR/photodetachment devices (PhP 1M), and 5) Repair of nanosecond Nd:YAG laser. The femtosecond laser facility will allow NIP researchers to carry-out new experiments in high-speed processes in semiconductor devices, two-photon excitation microscopy, ultrafast spectroscopy and nonlinear processes. A femtosecond laser permits the delivery of optical energies at high peak powers but low average powers - a condition that enhances the probability of occurrence for nonlinear events without damaging the sample via Joule heating.

The NIP requested and obtained from Chancellor Emerlinda Roman, an additional amount PhP 1M to supplement its regular MOOE budget of PhP 0.85M. In 2001, the NIP also requested and received the same amount of supplemental MOOE budget from the Office of the Chancellor.

In the area of instructions, efforts have been spent to improve the facilities of the Microcomputer laboratory and the Advance Physics laboratory which are heavily utilized by the Physics and Applied Physics majors. Forty personal computers were purchased using the funds that are available in Center of Excellence grant to NIP from the Commission on Higher Education. The quality of instruction in the courses that use these laboratories has also improved considerably over the years.

Physics 10 (*Physics and astronomy for pedestrians*) which is a general education course (3 hours per week, 40 students per class), was offered for first time in the 1st semester of AY 2002-2003. A team of experienced physics instructors headed by Dr Jose Perico Esguerra handled the lone Physics 10 section. In the 2nd semester, two sections of Physics 10 courses were offered and handled by the same team of instructors.

Measures were also taken to improve the passing rates in the Physics 7X courses for science and engineering students. A self-imposed passing rate of 75% in a given Physics 7X class was adapted. The target rate has been largely achieved in the classes that were offered since SY 2001-2002, by improving the quality of examination questions and without compromising the level and quality of instruction in the said courses. Instructors and teaching associates have participated voluntarily in a number of seminars that were conducted by the Office of Instruction of UP Diliman.

Since June 2000, the NIP office has instituted a new procedure to improve the efficiency of issuing prerogatives to students who are unable to register in the Physics 7X and Physics 7X.1 classes during the regular period.

Our faculty members are also active in the activities of the Samahang Pisika ng Pilipinas (Physical Society of the Philippines). In December 2001, Dr Salvador and Dr Soriano ended their 24-month terms as SPP President and Secretary-General, respectively. Dr Daza and Dr Litong-Palima are assuming the positions of SPP President and Secretary-General respectively, starting January 2003. Dr Zenaida Domingo is the current chair of the NRCP Physics Division. A number of NIP faculty have also been appointed as administrators and advisers in University and other government agencies. Dr Henry Ramos is the program coordinator of the Science and Society Program of the College of Science, UP Diliman. Dr Jose Magpantay serves as a science and technology adviser in the office of UP President Francisco Nemenzo, Jr.

Latest information about the NIP may be obtained from its official website: www.nip.upd.edu.ph.

B. Personnel and Organization

In 1 June 2002, Dr. Caesar Saloma began to serve the third and last year of his term as the Director of the Institute. Dr. Saloma has been ably assisted in managing the day-to-day operations of the Institute by the following Deputy Directors: 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. The complete organizational structure of NIP is given in the Annual Reports of 2000 and 2001.

The NIP Executive Council which is chaired by the NIP Director, is the highest policy-making body of 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 student 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 handling 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 (with a term of one academic year) the NIP Executive Council through the recommendation of the NIP Director. Mr. Giovanni Tapang served as GPC chair in AY 2001-2002. The current GPC chair is Mr Matthew George Escobido.

In the 2nd semester of SY 2002-03, the NIP faculty consists of 22 Ph.D.'s (8 professors, 3 associate professors, 11 assistant professors) and 15 instructors (five with MS degrees) and 15 teaching associates. For a complete list, see: http://www.nip.upd.edu.ph/people/person_faculty.html. Of the 35 faculty items that are designated to NIP, eight are tenured (22.8%) which represents the lowest percentage among all the academic units in the College of Science.

In 2002, three faculty members (VR Daria, C Villagonzalo, CM Blanca) went on postdoctoral research. Dr Villagonzalo and Dr Blanca are expected to rejoin the active teaching force in the 2nd semester of SY 2002-03. Dr Linda Posadas applied for retirement from service in July 2002. Dr Posadas who is a tenured faculty member, went on secondment on 1 July 1993 and has not reported back to active service since that time. Mr Rex Absin (Instructor) is the only remaining faculty member on study leave (without pay). He has been with Latrobe University in Melbourne, Australia pursuing a PhD degree before June 2000.

For its research staff, NIP also employs one University Researcher (W Garcia of Photonics Research) and three University Research Associates (R Cureg of Liquid Crystals, V Noguera of Plasma Physics, B Buenaobra of Instrumentation Physics). Wilson Garcia received his PhD degree from UP in December 2002. Engr. Buenaobra who became a regular UP employee in October 2002, has hired primarily to operate and maintain the NIP femtosecond laser facility. The NIP also hires a number of undergraduate and graduate student assistants on a 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-charged 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.

To provide administrative and technical support to the academic functions of NIP is a team of fourteen personnel that is under the direct supervision of Ms Flora Luis (the NIP administrative officer). Mr Arturo del Rosario was hired as the new NIP electrician in September 2002 vice Mr Robert Gray who applied for early retirement due to health reasons. Complete information about the names and designations of these personnel are found in: http://www.nip.upd.edu.ph/people/person_admin.html and http://www.nip.upd.edu.ph/people/person_tech.html.

C. Academic Programs

The NIP offers the following degree programs: BS Physics, BS Applied Physics, MA Physics, MS Physics, and PhD (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 MS Materials Science and PhD Materials Science (with the College of Engineering).

Every B.S. student is required to submit a thesis that is based on a research work which is done under the supervision of 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.

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.

Table. Enrollment Data

Enrollment Data	AY 2000-01			AY 2001-02			AY 2002-2003		
	1st Sem	2nd Sem.	Sum	1st Sem	2nd Sem	Sum	1st Sem	2nd Sem	Sum
Ph.D. Physics	14	13	4	21(3)	16(3)	3	19(1)		
M.S. Physics	31(1)	34	14(3)	37(4)	36(4)	10(4)	43(6)		
M.A. Physics	3	-	-	4	2	-	2		
B.S. Physics	147(2)	134(2)	88(1)	148(1)	142(3)	104	165(2)		
B.S. Applied Physics	167(10)	167(5)	118(2)	167(3)	156(12)	108	164(1)		

The table indicates that the number of NIP graduate students has increased by 37.8% from June 2000 to June 2002. Similarly, the combined undergraduate population has increased by 4.8% within the same period. The NIP has the largest BS student population in the College of Science.

Most of our graduate students are full-time enrollees with scholarship support from the Department of Science and Technology (DOST). A large number of our college freshmen are also supported by DOST scholarships. Starting in AY 2001 - 2002, six Intel scholarship awards are awarded to qualified NIP students via a program that is administered by the Philippine Foundation for Physics Incorporated. In AY 2002 - 2003, the following students are recipients of the Intel scholarship awards: Gene Blantocas (PhD), Percival Almoro (PhD), May Lim (PhD), Dranreb Earl Juanico (MS), and Jennette Mateo (BS)

Since AY 2001-2002, the NIP has always aimed to improve the level of instructions in the general physics courses and to maintain the passing rate of its general physics classes (Physics 71, 72, and 73) to around 75% or better. This goal is to be achieved without compromising the quality of physics instruction and the academic freedom of instructors. A mechanism between the Office of the NIP Director, the GPC chair, and the various course groups has been instituted to monitor class performance after every long examination. Instructors are constantly advised to undergo seminars to test preparations offered by the Office of Instruction

The following is the performance of the various classes during the 2nd semester of AY 2001-2001:

COURSE	ENROLLMENT	PASS (%)	FAIL (%)	DROPPED (%)	GRADE OF 4.0 (%)
Physics 71	711	539 (76)	81 (11)	19 (3)	68 (10)
Physics 72	562	425 (76)	52 (9)	26 (5)	59 (11)
Physics 73	341	264 (77)	24 (7)	6 (2)	43 (12)
Physics 71.1	472	424 (90)	22	20	4
Physics 72.1	355	332 (94)	7	7	5
Physics 73.1	257	240 (93)	12	2	2

The following is the performance of the various classes during the 1st semester of AY 2002-2003:

COURSE	ENROLLMENT	PASS (%)	FAIL (%)	DROPPED (%)	GRADE OF 4.0 (%)
Physics 71	628	519 (83)	49 (8)	11 (2)	47 (7)
Physics 72	592	413 (70)	96 (16)	15 (3)	61 (10)
Physics 73	195	167 (85)	14 (7)	1	13 (7)
Physics 71.1	486	402 (83)	29	29	12
Physics 72.1	377	344 (91)	12	12	5
Physics 73.1	231	197 (85)	12	12	4

The above information does not take into account that those with grades of 4.0 could have passed the removal examinations given after the final examination period. If taken into consideration, the passing rates would definitely increase for the various lecture classes.

The student enrolment demand for slots in the three general physics laboratory courses (Physics 7X.1) have remained large and far outstrips the present capacity of NIP to absorb them. The NIP is already offering laboratory courses continuously from 8 am to 6 pm, Mondays to Fridays. Below is the demand profile in the 2nd semester of AY 2002 - 2003, which reveals a serious need to enlarge the current capacity

COURSE	DEMAND (NO. OF STUDENTS)	CAPACITY
71.1	988	450
72.1	624	360
73.1	669	216

In Physics 71.1, the demand is 2.195 times larger than the absorption capacity. In Physics 72.1 and 73.1 respectively the demand is 1.73 and 3.1 times larger. The inability of NIP to offer instruction in

Physics 7X.1 subjects to all those who need it implies an ever increasing number of students who requires a longer period of time (beyond the regular period stipulated in their curricula) to complete their degree requirements in science and engineering.

The NIP has identified that the lack of laboratory rooms is the most serious reason behind the capacity crisis. The second reason is the lack of laboratory set-ups which is currently being addressed using the funds that are available in the CHED CoE project. The completion of the Phase II project involving the first two floors of the Research Wing of the new NIP building, is expected to solve the crisis effectively.

D. Infrastructure and Facilities Development

The most notable infrastructure project in 2002 is the Phase II construction project which started in late November 2002. The Phase II project concerns the completion of the first two floors of the Research Wing of the new NIP Building along CP Garcia Avenue. The Research Wing consists of four floors with a total floor area of almost 6000 square meters which is already 1.5 times larger than the current NIP building. It houses not only the NIP research laboratories but also all the teaching laboratories in the two BS programs and the service courses. Completion of construction works under the Phase II project is expected in September 2003.

The space that is allotted for teaching laboratories in the first two floors of the Research Wing will enable NIP to offer two simultaneous sections of the three Physics 7X.1 classes. This means doubling the capacity of NIP to absorb the present student demand in the said courses. The same increase in capacity is expected in the laboratory courses in the BS Physics and Applied Physics programs. Currently in the old NIP building, two laboratory rooms are shared by Physics 181/182, 185/186 and 191/192 students.

Other development projects were also carried out in 2002 to improve the quality of life of the NIP community and to effect an efficient use of NIP resources.

The asphalted NIP parking lot extension has become fully operational for the NIP community. The lot is sufficient for the parking of ten vehicles. The distribution of the NIP water supply has also improved with the installation of a pump facility and the rehabilitation of the main NIP tank in the roof top of Llamas Hall.

The NIP library was transferred to Room 3100 (first floor, 3rd Pavilion) which was previously used as a general purpose stockroom. Room 3215 was converted into a faculty room for PhD faculty members. The room at the basement of 3rd Pavilion Annex was reacquired from the College of Social Science and Philosophy and rehabilitated for use as a stockroom.

To improve the presentation of class lectures, seminars and thesis defenses, the NIP acquired one additional LCD projector in addition to another one that was acquired in 2001. A notebook was also purchased for the same purpose. The two equipment were acquired using CHED-CoE funds.

E. Research Highlights

The NIP is the leading research center of physics and applied physics in the country. In 2002, NIP researchers published a record of 27 papers in ISI-abstracted journals representing 82% of all physics papers from the Philippines. List of ISI publications of NIP in 2002 is presented in Appendix A. In 2002, NIP scientists were able to publish for two papers in the Physical Review Letters based on a research work that was completely done at NIP.

Figure 1 plots the yearly number of physics publications in ISI journals since 1993 for NIP and the Philippines. Between 1993 and 2002, NIP has produced 86% of all ISI papers in physics. A steady increase in the publication number could be observed in the last three years. In 2002, a year-to-year increase of 68.7% has been accomplished.

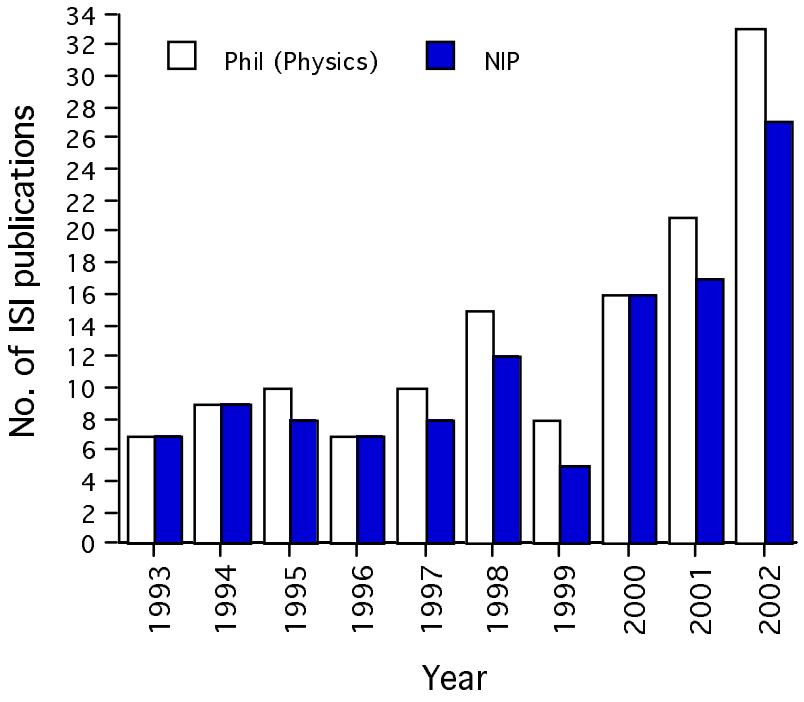


Figure 1. Annual number of ISI publications

NIP researchers also gave 81 technical presentations (61% of total) in the 20th Physics Congress of the Samahang Pisika ng Pilipinas which was held in Naga City on 23-25 October 2002. The number of NIP papers represents 71% of total which is roughly the same percentage as that the 19th SPP Congress. Appendix A1 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. The amount is divided equally among the authors.

The first international patents were applied by NIP researchers in 2002. The UPD Office of the Vice-Chancellor for Research and Development assisted NIP researchers in the application procedure. The patents were assigned by the inventors to the University of the Philippines and Department of Science and Technology.

These patent applications are:
1. *Titanium nitride thin film formation on metal substrate by chemical vapor deposition in a magnetized sheet plasma source* (modified by the international searching authority to read: Method for formation of titanium nitride films)

Application no. pct/ph02/00003
Filing/priority date: 27 february 2002
Applicants: Henry Ramos, PCASTRD, UP Diliman

Separate patent applications have also been filed in Malaysia and Taiwan (which are not pct signatories), with the following particulars:
Malaysia: Application no. pi 20024041/ Filing date: 29 October 2002
Taiwan: Application no. 91132002/ Filing date: 28 October 2002

2. *Method for generating high-contrast images of semiconductor sites via one-photon optical beam-induced current imaging and confocal reflectance microscopy*

Application no. pct/ph02/00013
Filing/priority date: 09 July 2002
Applicants: C. Saloma, J Miranda, V Daria, UP Diliman, PCASTRD
Status: Entry into the national phase not later than 09 January 2005 (30 months from the priority date), and not later than 09 march 2004 for pct states which have retained the 20-month deadline.

3. *Two-color (two-photon) excitation with focused excitation beams and a Raman shifter*

Application no. pct/ph02/00018
Filing date: 27 September 2002
Applicants: C. Saloma, W. Garcia, J. Palero , UP Diliman, PCASTRD

The following NIP students received academic awards during the Recognition Program of the College of Science on 21 April 2002:

Christopher Monterola	*Most Outstanding PhD Graduate*
Peter John Rodrigo	*Most Outstanding MS Graduate*
Dranreb Earl Juanico	*Most Outstanding BS Physics Graduate*
Marko Arciaga	*Most Outstanding BS Applied Physics Graduate*
Dranreb Earl Juanico	*Best Thesis (BS Physics)*
Kristin Bautista	*BestThesis (BS Applied Physics)*

The following NIP personnel were recipients of the Gawad Chanselor in February 2002:

Pinakamahusay ng Estudyante (Antas Gradwado)
Christopher Monterola

Pinakamahusay na Nilathalang Pananaliksik
M Quito, C Monterola & C. Saloma, "Solving N-Body Problems with Neural Networks," Phys Rev Lett 86, pp. 4741-4744 (2001)

Natatanging Imbensiyon at Inobasyon
J Palero & W. Garcia - Development of a Raman Light Source

The paper of V. Noguera and H. Ramos entitled, "*Production efficiency of H^- ions from a magnetized sheet plasma source*," received the best paper award (poster category) in the Joint International Plasma Symposium of 6th Asia Pacific Conference on Plasma Science and Technology, 15th Symposium on Plasma Science for Materials, 4th International Conference on Open Magnetic Systems for Plasma Confinement (OS 2002) and 11th Korea Accelerator and Plasma Research Association in Jeju Island, Korea (1-4 July 2002),

The NIP received an equipment grant of PhP 18M which was used to acquire: 1) Femtosecond laser facility (PhP 12M), 2) High-field Hall facility (PhP 2M), 3) Electro-optic facility (PhP 1M), 4) ECR/photodetachment devices (PhP 1M), and 5) Repair of nanosecond Nd:YAG laser. The femtosecond laser facility is operated by NIP as a primary light source for researchers in their sanctioned research projects. The laser facility is housed in Room 3111.

F. Extension Efforts & Alumni Relations

The voluntary services of NIP scientists are crucial to the continued growth of the *Samahang Pisika ng Pilipinas*. The two-year terms of Prof Arnel Salvador and Dr Maricor Soriano as SPP President and Secretary-General respectively, ended on 31 December 2002. Dr Marlon Rosendo Daza and Dr Marisciel Litong-Palima will assume the said SPP responsibilities on 1 January 2003. Professor Zenaida Domingo chaired (term: one year) of the Physics Division of the National Research Council of the Philippines in 2002.

The Philippine Foundation for Physics, Inc. (PFPI) has continued the following fund raising activities for NIP: 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 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*. Financial assistance (PhP 3,100 per person) was given by PFPI to NIP non-academic personnel in 2002. The Intel Scholarship program for NIP students is also handled by the PFPI.

The NIP also providing space for the UP Physics Association (UPPA) which is a duly-recognized academic organization that is composed mostly of undergraduate physics students of UPD. The UPPA held the following activities in 2001: 1) Physics Week (January), UPPAgibig (February), 3) Freshman Orientation Program (May), 4) CHAOS & Bingo (September), and 5) Lantern Parade (December). Miss Apple Grace Naig is the current UPPA President.

G. Prospects for 2003

Our vision for NIP has been defined clearly. The indicators for assessing whether the vision is achieved in 2005, have also been described. The general challenge in 2003 is to sustain the improvements that were realized in the last two years in the areas of research, physics instruction and extension services. The realization of the NIP vision depends on the ability of the NIP community to secure incremental but steady improvements.

In 2003, the NIP hopes to see increases in the number of BS Physics and Applied Physics graduates that is being produced, as result of the number of measures that has been implemented by the Office of the NIP Director in the past two years.

Construction of the new NIP building is expected to continue in 2003 with the availability of fresh funds from the Office of the UPD Chancellor, Office of the UP President and hopefully, even from sympathetic legislators.

New research grants from the Philippine Foundation for Physics, Inc are expected to be available in 2003. The aim of these grants is to encourage our non-tenured PhD faculty members to engage in externally-funded research.

In 2003, the NIP will aim to increase the amount of research funds that is contributed by the (non-traditional) private sector including foreign organizations and agencies. This objective will be adequately achieved if NIP is able to package research proposals which are consistent with the objectives of these funding agencies which are often specific.

Chapter II. Report of the Deputy Director for Academic Affairs

by Dr Ronald Banzon

2.1 Curricular Proposals

2.1.1 MA Physics Program

The proposal to remove the laboratory component of the course Physics 204.1 (Foundations of Modern Physics I) was approved by the UP Diliman University Council on its 77th meeting held on 16 April 2002. This changes the credit units to four- (4 u.) from the original five units (5 u.). The proposal is found in Appendix H, page 1, of the proposed agenda for the meeting.

2.1.2 BS Physics and BS Applied Physics Program

2.1.2.1 Physics 71(Elementary Physics I) and Physics 101(Fundamental Physics I)

The proposal to have the same co-requisite requirement (Math 53 or its equivalent) for Physics 71 and Physics 101 was approved by the UP Diliman University Council on its 77th meeting held on 16 April 2002. The proposal is found in Appendix H, page 2, of the proposed agenda for the meeting.

2.1.2.2 Physics 104 (Modern Physics I)

The proposal to remove the Physics 112 (Mathematical Physics II) prerequisite requirement for Physics 104 was approved by the UP Diliman University Council on its 77th meeting held on 16 April 2002. The proposal is found in Appendix H, page 2, of the proposed agenda for the meeting.

The remaining prerequisite courses are Physics 103(Fundamental Physics III) and Math 121.1 (Elementary Differential Equations) or its equivalent.

2.1.2.3 Applied Physics 181 and 182 (Physical Electronics I and II)

The proposal to change the course descriptions of Applied Physics 181 and 182 (Physical Electronics I and II) was approved by the UP Diliman University Council on its 77th meeting held on 16 April 2002. The proposal is found in Appendix H, page 4, of the proposed agenda for the meeting.

The idea of the proposal was to have analog electronics topics covered in Applied Physics 181, while digital electronics topics will be studied in Applied Physics 182.

2.1.2.4 Change in Number of Units of Electives for the B.S. Physics Program

The proposal to change the number of units of Physics/App Physics electives, and Science/Math elective of the B. S. Physics Program was approved by the UP Diliman University Council on its 77th meeting held on 16 April 2002. The proposal is found in Appendix H, page 3, of the proposed agenda for the meeting.

The number of units was changed from the fixed requirement of three units (3 u.) to a variable three to five units (3-5 u.).

2.1.2.5 Biology 12 (Fundamentals of Biology II) as a Required Course

The proposal to remove Biology 12 (Fundamentals of Biology II) as a required course in all NIP sponsored undergraduate programs was approved by the UP Diliman University Council on its 77th meeting held on 16 April 2002. The proposal is found in Appendix H, pages 2, 5, and 6, of the proposed agenda for the meeting. It was replaced by a GE (Math, Science & Technology) course.

2.1.2.6 Change in Curriculum Checklists for Undergraduate Programs

The proposed curriculum checklists for B. S. Physics, B. S. Applied Physics (Materials Physics), and B. S. Applied Physics (Instrumentation Physics) was approved by the UP Diliman University Council on its 77th meeting held on 16 April 2002. The proposal is found in Appendix H, pages 7-12, of the proposed agenda for the meeting.

The updated checklists may be found in Appendix I.

2.1.2.7 Physics 10 (MST) (Physics and Astronomy for Pedestrians)

The institution of a GE course in physics, Physics 10 (MST) (Physics and Astronomy for Pedestrians), was approved by the UP Diliman University Council on its 77th meeting held on 16 April 2002. The proposal is found in Appendix GD, pages 1-3, of the proposed agenda for the meeting.

Following is an excerpt from the proposal, indicating particulars of the course.

Course Number:	Physics 10 (MST)
Course Title:	Physics and Astronomy for Pedestrians
Course Description:	A “walk-through” course for people who want to enjoy physics & astronomy
Prerequisite:	none
Credits: 3 u.	

Course Objectives:

1) To introduce concepts from various sub-disciplines of physics and astronomy to students and to develop an appreciation of the position of mankind in the universe.
2) To update the student with the latest development in physics and astronomy.
3) To refine the student’s understanding of the role of physics and its sub-disciplines in technological innovations and in the advancement of other fields in the natural and social sciences. The latter, in turn, conditions other human activities, transforming processes by which humans interact.
3) To acquaint the student with the current state of physics & astronomy education and research in the Philippines.

4) To enable the student to understand the character and functions of science and technology and develop an appreciation of the key role of science and technology in national development.

2.1.2.8 The Movement for the Introduction of NST Courses

The College of Science Academic Affairs Committee started planning the institution of National Service Training Program (NSTP) courses for each institute/department of the College. It was suggested to propose courses that incorporate the field of specialization of the student, and at the same time consistent with the general principles of the NSTP.

A consultative meeting with freshmen and sophomore students of the Institute was held on Wednesday, 4 December 2002 to generate ideas that may be utilized in the formulation of the proposed courses.

2.2 Developments in the Implementation of Undergraduate Programs

2.2.1 Recitation/Problem Solving Sessions for Physics 10x

A problem solving/recitation session has been introduced in all Physics 10x (Physics 101, 102, 103, 104, and 105) classes as resources permit. The introduction of these sessions serves to increase the degree of familiarity of students with particular applications of theoretical relations. It also minimizes the temptation, on the part of the instructor, of having a purely theoretical lecture.

2.2.2 Retention Rules

The Secretary's Office of the College of Science did not yet have a convenient way of applying the rules for the determination of students to be retained in the undergraduate programs of the Institute. A movement to computerize student records at the College is ongoing. In the mean time, it will be left for the advisers to determine and report students who do not meet the requirements for retention.

2.2.3 Applied Physics 195 and Applied Physics 195A

The Institute entered its second year of offering the courses Applied Physics 195 (Special Topics in Applied Physics: Modern Control Systems), and Applied Physics 195A (Special Topics in Applied Physics: Modern Control System II), as substitutes for EEE 101(Control Systems Theory) and ECE 123 (Digital Instrumentation & Control Techniques) respectively.

Particulars of the courses have been submitted to the EEE department of the College of Engineering and have been accepted as sufficient substitute courses.

The Institute intends to continue offering the course until a curricular proposal that eliminates the need for EEE courses in the B. S. Applied Physics (Instrumentation Physics) curriculum is approved.

2.2.4 Late Undergraduate Thesis Advising for Students

As a response to the increasing number of advanced undergraduate students without a thesis adviser, the Institute started a program that seeks to assign students of Fourth-year standing and beyond to appropriate faculty members for thesis advising.

A minimum of fourth-year standing as a student of a NIP-sponsored program who is not attached to a research adviser may request the Institute to assign one for himself/herself. The letter will be addressed to the Deputy Director for Academic Affairs containing the student's research interest(s) and a list of suggested thesis advisers. The letter of application will include as attachment a comprehensive True Copy of Grades (TCG). The applications were evaluated at the start of the First Semester AY 2002-2003.

2.3 Undergraduate Thesis

The undergraduate thesis presentation continues to follow the format of the past two years – a twenty-minute open forum and examination, and then a ten-minute deliberation of the panel members follows the thirty-minute presentation.

As much as possible, faculty members were not assigned consecutive presentations to avoid delays in the schedule. This was a compromise from the suggestion of introducing a short break between presentations, which would have required an extended schedule.

A total of twenty-three (23) presentations were made during the year. An increase of five (5) presentations from that of the previous year. Making the observation that this is larger than the total number of BS Physics presentations of the previous year makes the increase of almost 28% more significant.

The table below (Table 1) summarizes the number of undergraduate theses presented during the year and that of the previous year enclosed in parentheses.

Table 1: Number of Undergraduate Thesis Presentations in 2002 and (2001)

Degree Course	Second Semester 2001-2002	Summer 2002	First Semester 2002-2003	Total
BS Physics	4 (2)	3 (1)	3 (0)	10 (3)
BS Applied Physics	11 (10)	1 (0)	1 (5)	13 (15)

Following are the presentations made during the academic year.

Second Semester AY 2001-2002
The Undergraduate Thesis Presentations for the Second Semester AY 2001-2002 was held on Wednesday, 13 March and Saturday, 16 March 2002, at the NIP AVR. Following was the schedule of presentations.

DAY 1: Wednesday, 13 March 2002

08:00 AM
Arciaga, Marko E. (BS Applied Physics)
"Investigation of ExB Probe Parameters for Optimum Extraction of H- Ions from a Magnetized Sheet Plasma Source"
Adviser: Dr. Henry J. Ramos
Panel: Dr. Roland Sarmago, Mr. Nathaniel Hermosa

09:00 AM
Bahague, Ricardo Jr. (BS Physics)
"Confined Time-of-arrival Operators"
Adviser: Dr. Eric Galapon
Panel: Dr. Lorenzo Chan, Dr. Jose Perico Esguerra

10:00 AM
Bautista, Kristin Maria Angelus N. (BS Applied Physics)
"Growth and Characterization of Liquid Phase Epitaxial p-Gallium Arsenide Layers and pn-junction"
Adviser: Dr. Arnel Salvador
Panel: Dr. Ronald S. Banzon, Mr. Christopher Monterola

11:00 AM
Cadatal, Marilou M.(BS Applied Physics)
"Theory and Application of Phase-shifting Digital Holography"
Adviser: Dr. Marlon Rosendo H. Daza
Panel: Dr. Maricor Soriano, Mr. Giovanni Tapang

12:00 NN
Cardinal, Ma. Gracita (BS Applied Physics)
"Enhancement of H- ion Production with Xe Gas in a Magnetized Sheet Plasma"
Adviser: Dr. Henry J. Ramos
Panel: Dr. Marlon Daza, Dr. Ludek Jirkovsky

01:00 PM
Cemine, Vernon Julius R. (BS Applied Physics)
"Performance of the Sinusoid-crossing Sampling in Noise-assisted Weak Signal Detection"
Adviser: Dr. Caesar Saloma
Panel: Dr. Marlon Daza, Mr. Wilson Garcia

02:00 PM
Domingo, Herbert B. (BS Physics)
"The Time of Arrival Quantum-Classical Correspondence Problem for Arbitrary Arrival Point"
Adviser: Dr. Eric A. Galapon
Panel: Dr. Danilo Yanga, Dr. Jose Perico Esguerra

DAY 2: Saturday, 16 March 2002

08:00 AM
Dungao, Jade R. (BS Applied Physics)
"Holographic Animation of Two- and Three- Dimensional Images Using Angle-multiplexing ina a Z-cut Fe-doped (0.05%) LiNbO3 Crystal"
Adviser: Dr. Marlon Rosendo H. Daza
Panel: Dr. Maricor Soriano, Ms. May Lim

09:00 AM
Estonactoc, Melvin Ferrer (BS Applied Physics)
"Electro-optic Characterization of Twisted-nematic Liquid Crystals Driven by a Frequency-varying Voltage Source"
Adviser: Dr. Zenaida Domingo
Panel: Dr. Caesar Saloma, Dr. Roy Tumlos

10:00 AM
Gabayno, Jacque Lynn F. (BS Applied Physics)
"Two-wave Mixing in Dye-doped Nematic Liquid Crystal E7"
Adviser: Dr. Marlon Rosendo H. Daza
Panel: Dr. Luis Ma. Bo-ot, Dr. Roy Tumlos

11:00 AM
Juanico, Dranreb Earl (BS Physics)
"Allelomimesis: A Simple Mechanism for Self-organized Aggregation"
Adviser: Dr. Caesar Saloma
Panel: Dr. Ronald S. Banzon, Mr. Matthew George Escobido

01:00 PM
Muldera, Joselito E. (BS Applied Physics)
"Cholesteric Liquid Crystal Behavior with Different Surface Alignment Layers"
Adviser: Dr. Zenaida Domingo
Panel: Dr. Henry Ramos, Dr. Arnel Salvador

02:00 PM
Nakan, Rowanie A. (BS Applied Physics)
"Synthesis of Diamond and Diamond-like Carbon Thin Films on Si(100) Substrates via Plasma Enhanced Chemical Vapor Deposition (PECVD)"
Adviser: Dr. Henry J. Ramos
Panel: Dr. Luis Ma. T. Bo-ot, Ms. Michelle Bailon

03:00 PM
Noguera, Virginia R.(BS Physics)
"Sheet Plasma Negative Ion Source Production Efficiency Measurements Using Second Derivative of I-V Traces"
Adviser: Dr. Henry J. Ramos
Panel: Dr. Roland Sarmago, Mr. Armando Somintac

04:00 PM
Oblefias, Wilma R.(BS Applied Physics)
"Reconstruction of Fluorescent Color Signal at Per Pixel Resolution Using Image Color and Principal Component Analysis"
Adviser: Dr. Maricor Soriano, Dr. Caesar Saloma(co-adviser)
Panel: Dr. Cynthia Saloma, Mr. Percival Almoro

Summer 2002

The Undergraduate Thesis Presentations for Summer 2002 was held on Monday, 6 May 2002, at the NIP AVR. Following was the schedule of presentations.

09:00 AM
Gadjali, Maylene M. (BS Physics)
"Gamma Radiation Effects on Thermotropic Transitions of Erythrocyte Lipids"
Adviser: Dr. Zenaida B. Domingo
Panel: Dr. Henry Ramos, Mr. Percival Almoro

10:00 AM
Gianan, Oamar Nanaig Y. (BS Applied Physics)
"Ultrasound Imaging Simulation Using Exact Spatial Impulse Response Solutions and Neural Networks"
Adviser: Dr. Maricor Soriano
Panel: Mr. Johnrob Bantang, Mr. Nathaniel Hermosa II

11:00 AM
Innis, Vallerie Ann A.(BS Physics)
"Structural Effects of Estradiol on the Mitochondrial Membranes of Brain Cells of Mice Irradiated In Utero"
Adviser: Dr. Zenaida B. Domingo
Panel: Dr. Perico Esguerra, Mr. Armando Somintac

01:00 PM
Naceno, Grace Anne K. (BS Physics)
"Morphology of the Holographic Gratings in Dye-doped Polymer Dispersed Liquid Crystals"
Adviser: Dr. Zenaida B. Domingo
Panel: Mr. Elmer Estacio, Ms. May Lim

First Semester AY 2002-2003

The Undergraduate Thesis Presentations for the First Semester AY 2002-2003 was held on Wednesday, 2 October 2002, at the NIP AVR. Following was the schedule of presentations.

9:00 AM
Ma. Adoracion P. Manuel (BS Physics)
"Holography Using a 639 nm Laser Diode"
Adviser: Dr. Marlon Rosendo H. Daza
Panel: Dr. L. Bo-ot, Dr. R. Sarmago

10:00 AM
Roselyn S. Pabilonia (BS Applied Physics)
"Numerical Simulations of Focusing Properties of a Lensed Optical Fiber"
Adviser: Dr. Marlon Rosendo H. Daza
Panel: Dr. Maricor Soriano, Dr. Arnel Salvador

11:00 AM
Jennifer Ranay (BS Physics)
"Optimization of Hydrogen Plasma Parameters for Negative Hydrogen
Ion Extraction in a Plasma Sputter-type Negative Ion Source"
Adviser: Dr. Henry Ramos
Panel: Dr. Jose Perico Esguerra, Dr. Ronald S. Banzon (vice Dr. Zenaida Domingo)

01:00 PM
Michael Reuben C. Solis (BS Physics)
"New Results in Tsallis Statistical Mechanics"
Adviser: Dr. Jose Perico H. Esguerra
Panel: Dr. Jose Magpantay, Dr. Eric Galapon

2.4 Undergraduate Program Student Profile

The NIP continues to have the largest undergraduate student population in the College of Science for the second year in a row. Data from the Secretary's Office of the College indicates that the total number of undergraduate students for the combined undergraduate programs of the NIP is 329 for the first semester (IB is a close second with 308), and 319 for the second semester (IB is second with 295) for AY 2002-2003.

Table 2 shows the distribution of students by year of admission during the First Semester, while Table 3 shows the same for the Second Semester AY 2002-2003 and for AY 2001-2002 enclosed in parentheses. Similar data from the Secretary's Office of the College of Science may be found in Appendix II.

The total number of third year standing students (3rd and 4th year by year of admission) continues to be large, prompting a continued offering of a larger class size for third year level courses. As reported in the previous year, this sustained number of students beyond the third year strains the available resources for instruction, especially those with a laboratory component.

Table 2: Total Enrolment for the First Semester AY 2002-2003 & (2001-2002)

Course	1st year	2nd year	3rd year	4th year	5th year	6th year	7-9th year	Total
BS Applied Physics	47(45)	39(37)	25(31)	26(20)	15(24)	10(2)	2(08)	164(167)
BS Physics	57(53)	39(33)	22(29)	21(14)	14(08)	8(7)	4(03)	165(147)
Total	104(98)	78(70)	47(60)	47(34)	29(32)	18(9)	6(11)	329(314)

Table 3: Total Enrolment for the Second Semester AY 2002-2003 &(2001-2002)

Course	1st year	2nd year	3rd year	4th year	5th year	6th year	7-9th year	Total
BS Applied Physics	48(42)	37(35)	26(31)	26(18)	13(21)	9(1)	3(08)	162(156)
BS Physics	53(51)	38(32)	21(27)	20(15)	14(08)	6(6)	5(03)	157(142)
Total	101(93)	75(67)	47(58)	46(33)	27(29)	15(7)	8(11)	319(298)

From data in tables 2 and 3, we may note a nominal increase in the total number of students beyond the second year (third year and higher). For the First semester, the current academic year had one more student compared to last year's total (146 to 147), while the Second semester had five more (138 to 143). A more significant difference may be found in the number of students beyond the third year (fourth year and higher). The First semester of the current academic year had fourteen (14) more students compared with the previous year (86 to 100), while the Second semester had sixteen (16) more (80 to 96).

The increase in the number of students beyond the third year suggests a need for an increased number of students to be accommodated by faculty/research groups for undergraduate thesis advising.

Table 4A: Total Freshman Enrolment for the First Semester and Number of Graduates for the Academic Years Starting 1997-2001

Course	1997-1998	1998-1999	1999-2000	2000-2001	2001-2002
BS Applied Physics	31 (10)	67 (7)	69 (6)	41 (17)	45(15)
BS Physics	43 (03)	67 (9)	60 (0)	42 (05)	53(04)
Total	74 (13)	134 (16)	129(6)	83 (22)	98(19)

Tables 4A and 4B shows extracted data from reports of the Secretary's Office of the College of Science, indicating the number of freshmen and graduates for the academic year over the past few years. The numbers of graduates are enclosed in parentheses. Tables have been reported last year with the column for 2001-2002 now with data for the number of graduates.

It is a bit disturbing to note that the number of graduates for the AY 2001-2002 was nineteen (19) only, given that the number of students in their fifth year and beyond during the second semester of that year was forty-seven (47). This parameter may be monitored in the coming years to evaluate the efficacy of instituted programs or suggests the introduction of new policies.

The number of graduates of the recently concluded academic year (2001-2002) shows a slight decrease in number. The decrease is not expected to be representative of a trend since the number of students retained beyond the third year has been shown to increase.

Table 4B: Total Freshman Enrolment for the First Semester and Number of Graduates for the Academic Years Starting 1992 - 1996

Course	1992-1993	1993-1994	1994-1995	1995-1996	1996-1997
BS Applied Physics	21 (12)	28 (19)	32 (05)	18 (21)	22 (09)
BS Physics	20 (05)	36 (03)	43 (05)	24 (05)	57 (06)
Total	41 (17)	64 (22)	75 (10)	42 (26)	79 (15)

Choosing to define "graduation rate" as the number of graduates of an academic year over the number of freshmen five years earlier. This rate may be calculated from Tables 4A and 4B from the academic year ending 1998 to 2002. In percentage, these calculations yield in succession about 20 (13/64), 21 (16/75), 14 (6/42), 28 (22/79), and 26 (19/74) for the past five years. A significant increase in the graduation rate has been realized in the last two years. The increase in the graduation rate was coupled with an actual increase in the number of graduates.

It would not be surprising to have an estimated graduation rate for the current academic year (2002-2003) that is smaller than that for the academic year ending 2002, due to the large number of AY 1998-1999 freshmen (134, from Table 4A). The same would be true for the graduation rate for AY 2003-2004 (129 freshmen during AY 1999-2000).

The sum of the number of third and fourth year students was used previously to estimate the number of graduates in future years. The influence, in terms of graduation rate, is to be realized two years later. From Figure 1, we note that a significant increase in the sum of third and fourth year students occurred during the AY 2000-2001, when it seems to have saturated. From these considerations, we expect a significant increase in the number of graduates by the end of the current academic year.

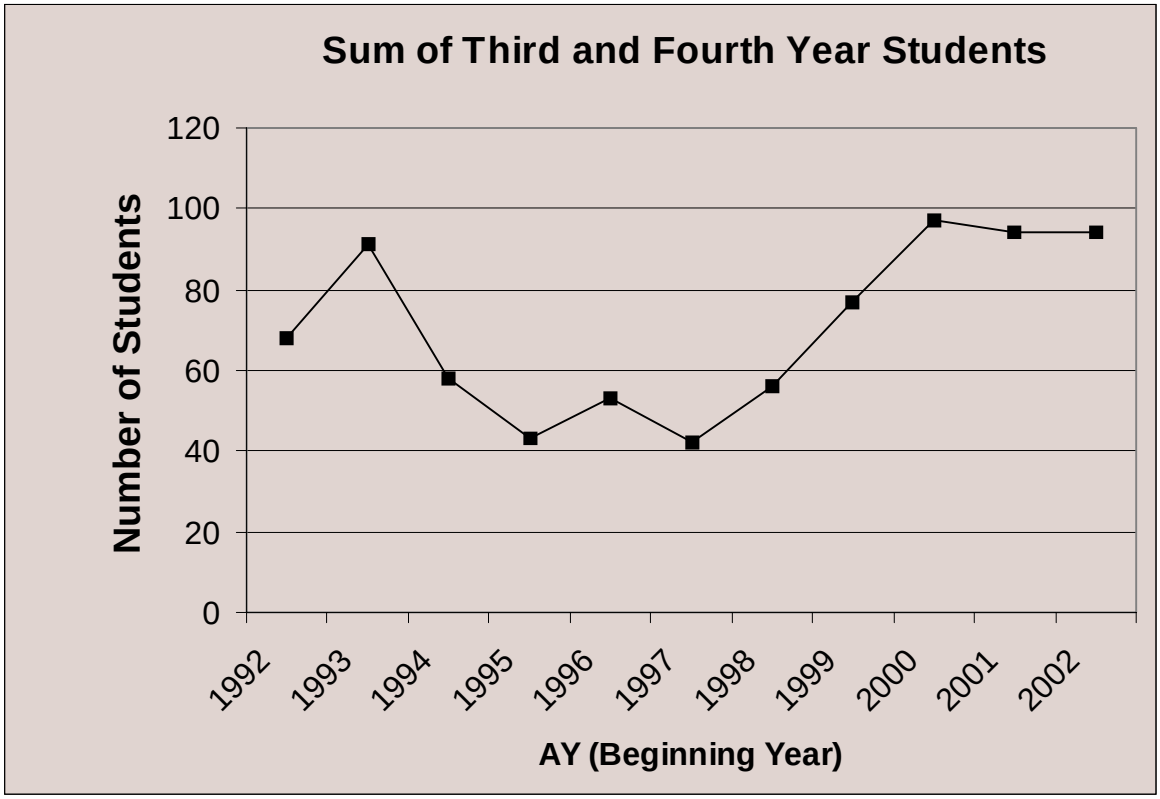


Figure 1 Sum of third and fourth year students in NIP undergraduate programs

2.5 Service Courses

2.5.1 Textbooks

The laboratory manuals for Physics 7x.1 courses were again updated under the supervision of Dr. Maricor Soriano.

So far, the Institute was provided a single review copy of the text by Resnick and Halliday for evaluation. The acquisition of more review copies, through C&E Publishing, Inc. , has not materialized due to some difficulties with the local office of the publisher. The number of candidate texts for review will be increased during the coming academic year. Arrangements for them will be made during the summer break.

2.5.2 Physics 7x and 7x.1

The program to monitor the passing rate of traditional service courses of the Institute, with a target of about seventy-five percent (75%) of the total number of initial enrollees, is now in its second academic year.

A summary of data reported by Mr. Percival Almoro, chair of the General Physics Committee, for the student performance in Physics 7x and Physics 7x.1 courses is shown in Tables 6 and 7.

The target passing-rate of at least 75% was finally achieved for all courses during the Second Semester AY 2001-2002, as shown in the last column of Table 6.

Table 6: Student Performance Second Semester AY 2001-2002

Course	Number of Students	Pass	Fail	"4.0"	Drop	INC	Percent Passed
Physics 71	711	539	81	68	19	4	75.81
Physics 72	562	425	52	59	26	0	75.62
Physics 73	341	264	24	43	6	4	77.42
Physics 71.1	472	424	22	4	20	2	89.83
Physics 72.1	355	332	7	5	7	4	93.52
Physics 73.1	257	240	12	2	2	1	93.38
Total	2698	2224	198	185	80	15	82.43

Table 7 shows the First Semester data for the current and previous academic year. Most of the service courses had a passing rate roughly equal to that of the previous year. The most significant change was that for Physics 72, where we had practically 70% passing compared to the previous year's 60%.

Table 7: Student Performance First Semester AY 2002-2003 and (First Semester AY 2001-2002)

Course	Number of Students	Pass	Fail	"4.0"	Drop	INC	Percent Passed
Physics 71	628 (623)	519 (467)	49 (60)	47 (75)	11 (15)	2 (6)	82.64 (74.96)
Physics 72	592 (669)	413 (402)	96 (121)	61 (102)	15 (40)	4 (2)	69.76 (60.09)
Physics 73	195 (271)	167 (236)	14 (12)	13 (22)	1 (1)	0 (2)	85.64 (87.08)
Physics 71.1	486 (575)	402 (461)	29 (31)	12 (5)	29 (34)	7 (35)	82.72 (80.17)
Physics 72.1	377 (375)	344 (342)	12 (16)	5 (7)	12 (6)	0 (4)	91.24 (91.20)
Physics 73.1	231 (263)	197 (235)	12 (5)	4 (4)	12 (11)	2 (8)	85.28 (89.35)
Total	2509 (2776)	2042 (2143)	212 (245)	142 (215)	80 (107)	15 (57)	81.38 (77.20)

The service course enrolment for the past three years is presented in Table 8. The average number of students per section during the first semester has remained virtually constant for most courses. The significant exception is Physics 73, where we note a 35% reduction from the past two years. The total number of students taking the course also decreased significantly due largely to changes in other CS programs that removed Physics 73 as a required course.

It may be that a more reasonable number of students per section of a lecture class would be about eighty (80). In the hope of approximating this class size, the distribution of the number of sections for the service courses may be modified to reduce further the average class size of Physics 71. This is a plan that still merits further consideration.

Table 8: Service Courses Enrolment for First and Second Semester AY 2002-2003, [First and Second Semester AY 2001-2002], and (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 [5] (5)	7 [7] (7)	628 [623] (630)	[718] (835)	125.60 [124.60] (126.00)	[102.57] (119.29)
Physics 72	7 [7] (7)	5 [5] (5)	592 [669] (640)	[558] (518)	84.57 [95.57] (91.43)	[111.60] (103.60)
Physics 73	3 [3] (3)	3 [3] (3)	195 [271] (301)	[346] (317)	65.00 [90.33] (100.33)	[115.33] (105.67)
Physics 71.1	26 [30] (20)	25 [25] (27)	486 [575] (435)	[479] (541)	18.69 [19.17] (21.75)	[19.16] (20.04)
Physics 72.1	21 [21] (20)	20 [20] (20)	377 [375] (349)	[348] (337)	17.95 [17.86] (17.45)	[17.4] (16.85)
Physics 73.1	12 [13] (12)	12 [14] (14)	231 [263] (228)	[255] (277)	19.25 [20.23] (19.00)	[18.21] (19.79)

The ideal average class size of eighteen (18) for laboratory courses has been achieved for Physics 72.1, and those for Physics 71.1 and Physics 73.1 are just about to get there. Though any excess beyond 18 indicates that there are more students who were unable to enlist in those courses – the excess being granted by a Director's prerogative.

2.5.3 Physics 103 and Physics 104 for College of Engineering Students

A reduced number of students have been recorded for the past few years in Physics 103 and Physics 104 for engineering students. It may be possible to offer a single section in the next academic year.

2.6 Registration

The College of Science still utilizes its faculty for enlistment. It is hoped that this activity, and those associated with it, will cease from being part of the regular workload of the faculty of the College of Science.

Chapter III. Report of the Deputy Director for Research and Extension

by Dr Arnel Salvador

In 2002 we broke new grounds in the area of patent application and in obtaining external funding from the private industry. These two milestones are in line with NIP's goals of obtaining some financial independence from traditional government support and increased visibility of NIP outside of the academe sector. The seeking of patents based on research work done at NIP is seen as a potential avenue for financially compensating the researchers, as well as the University for the support it has given to NIP . The financial support of the research activities of NIP from the private industry has been wanting for several years but in 2002 the NIP, through PFPI, worked hard to obtain an equipment grant from Intel Philippines Inc., amounting to some EU155,000. This represents the biggest commitment that Intel Philippines Inc., has made to an educational institution in the Philippines.

This year NIP faculty applied for three international patents. A US patent was obtained by Dr. H. Ramos for a process on TiN deposition using a magnetized sheet plasma.. Dr. Saloma and Dr. Daria. applied for a patent on single photon optical beam induced current (OBIC) spectroscopy to probe defects in semiconductor integrated circuits , and Dr. Saloma , Dr. Garcia and J. Palero applied for a patent for a hydrogen raman shifter as a source for two color excitation.

With the assistance of the Philippine Foundation for Physics Inc, the NIP was able to secure an equipment donation from Intel Philippines consisting of a streak camera,a monochromator and an autocorrelator valued at EU 155,000. This equipment will be used in tandem with the PhP 12 M femtosecond laser facilty that NIP acquired through the UP Laboratory Modernization Program. The UP Board of Regents has passed a resolution accepting the donation and Intel Philippines has recently made an initial downpayment for the equipment. An understanding has also been made for the funding of two- one year research projects amounting to PhP1.2 million.

In 2002 we also saw the arrival, upgrade and installation of equipment purchased through the UP Laboratory Modernization Program:Phase 1. The money was used to purchase the following :

1. various parts for the setup of an electron cyclotron resonance facility and the establishment of a photo detachment diagnostics facility in the Plasma Physics laboratory (PhP1M)
2. optical accessories for the electro-optic characterization of liquid crystals at the Liquid Crystal Laboratory (PhP 1M)
3. closed cycle helium cryostat and accessories for high field magnetic susceptibility set up for the Condensed matter Physics Laboratory (PhP 2M)
4. repair of the Nd:Yag laser of the Photonics research laboratory (PhP 1M)
5. optical accessories for routing of the visible output of the Nd:Yag Laser to the Plasma Physics Laboratory (Php 1M)
6. Establishment of a femtosecond laser facility (Php 12M).

The femtosecond laser facility is a joint user facility of the National Institute of Physics and accessible for use by its research groups. It consist of a Spectra-Physics Millenia® Vs compact diode-pumped Nd:YVO_4, laser , a Spectra-Physics Tsunami® mode-locked laser, and a Spectra-Physics 3980-4 Femtosecond Frequency Doubler. The facility is capable of producing 80fs pulses at a repetition rate of 82 MHz with peak powers of 750 mw in the the 720-850nm range, and 250 fs pulses with peak powers of 200 mw in the 390-420 nm range. The 5-watt ouput of the Millenia may also be used to drive the Spectra-

Physics 3900S Ti:sapphire laser. This unit outputs within the same range as the Tsunami, but with a CW operation. The facility is housed in a room between the Instrumentation Physics and Photonincs Research Laboratories. Its maintenance for the year 2002 was shouldered by a PhP 1M grant provided by the UP Diliman Chancellor's Office. It is expected that the various research laboratories who will need the services of the facility will provide additional funding for its maintenance. The femtosecond laser facility was formally opened on .Nov.22, 2002.

As external research groups, the NIP has set up a UP trust account for better record keeping. All payments for the use of NIP equipment will now be deposited to this trust account.

Finally , the NIP continues to strive for increased and better quality research outputs. In 2002 the number of ISI publications rose to 27 compared to 19 in 2001. The works of our faculty were also presented in international conferences thanks in part through funding from the CHED grant . As more of our faculty members are becoming active in having their works published , the Institute is now moving towards the goal of having increased journal citations for researches done at NIP. A conscious effort is being made that the research works be published in ISI journals which have high impact factors and citations in their respective fields.

Chapter IV. Report of the Deputy Director for Resources and Facilities
by Dr Luis Ma. Bo-ot

In 2002, the duties and functions of the Deputy Director for Resources and Facilities (DDFR) were assigned to two members of the Institute. Dr. Maricor Soriano assumed the position of Deputy Director from January to May and Dr. Luis Ma. T. Bo-ot assumed the position from July until December.

During the term of Dr. Soriano, the guidelines for rental of NIP rooms by non-NIP persons was established which led to the opening of an NIP Trust Account No. 9264-884-995-005 with UP Diliman Accounting Office. Proceeds to this account will be used for subsequent improvement of NIP Facilities. The established room rates are:

Rms. 3202 and 3207 120 seating capacity, aircon	P 150/ half hour
Rm. 4234 80 seating capacity, aircon	**P 80/ half hour**
Rms. 4226, 4228, 4230, 4236, 4238 40 seating capacity, non-aircon	P 50/half hour
Overhead projector or sound system	P 150 flat rate

Waste-segregated trash bins were distributed in all corridors. Dr. Soriano also obtained significant discounts from PEI (Philippine Electrical Industries) for the repair of two Tektronix oscilloscopes. A second LCD projector was also procured to be used primarily for regular theses deliberations and for the instruction of the new course Physics 10. Plans for additional parking to be located in the area across the street of the Llamas Hall facade were also drawn up and these were implemented by the first semester.

A key project initiated by Dr. Soriano in February was the request for 40 new computers to be used in teaching the Elementary Physics Lecture and Lab courses, the Advanced Physics Lab and the Physical Electronics Lab. In line with the NIP efforts to modernize experimental set-ups in the labs, the 40 computers where purchased to support teaching and lab instruction. These computers including peripherals amounting to around P 1.14M were requested and charged to the CHED National Center for Excellence Program of the NIP. The hardware is broken down to 32 units of computers with Intel Pentium 1.7 GHz processor, 80GB Seagate HDD, 128MB SDRAM and 32MB VGA card and another 8 units of the same specifications but already with an MS Office Media Kit already installed.

The computers are now being used for interfaced experiments, simulations, numerical calculations, presentations, and demonstrations. Included in the acquisition amount is a purchase of a proper software and Microsoft XP was chosen due to its inclusive software packages especially those related to visualization. Consultations with Microsoft Philippines resulted in the application for Microsoft XP under the so-called MSDN Academic Alliance, a feature of which is that a large number of NIP computers are

allowed to be legitimate users of XP. Thus other NIP computers can also make use of the software. The price for the license is P 46,000 yearly, inclusive of VAT.

The package consists of Windows 98, ME 2000 and XP operating systems, programming languages such as Visual C++ and Visual Basic, and diagram-drawing tools such as Visio Professional. These various software is useful for courses requiring numerical simulations, visual presentations and user interfaces. Demo videos have been created and interactive demos are being used in lectures. The teaching labs are currently rewriting the elementary physics lab manuals to incorporate the use of computers in data gathering and analysis. Peripherals like 3 printers, a scanner and UPS were also included in the purchase.

The 40 computers are distributed to the labs as follows:

Advanced Lab	- 8 units
Electronics Lab	- 6 units
Elementary Physics Lab	- 15 units
Microcomputer Lab	- 3 units
General Physics Committee	- 6 units
Theory Group	- 1 unit
Spare	- 1 unit

Upon procurement of the 40 computers by the end of the first semester, they were distributed to the respective labs. For the elementary physics laboratories, since there will be an interfacing with the experiments, overhead trays for the wires were planned and are now currently being installed. These are being done utilizing in-house resources and personnel.

More importantly, from January to May, the plans for the New NIP Building (NNIP) along C.P. Garcia were finalized. These plans formed the basis for the eventual restarting of the construction of the NNIP in September last year. Actually the NNIP in its current phase of construction is a resizing and redesigning of the original plans circa 1995, and it was during the term of Dr. Soriano that the revised plans were made ready for the eventual bidding and restart of the construction. Included in these revisions during the first parts of the year were the corrections to the electrical power requirements of the NNIP. Please refer to Appendix G for a copy of the revised plans.

Thus during the latter half of the year, most of the work of Dr. Bo-ot as DDFR centered on the implementation of the NNIP. Upon notice of available budget from the Office of the Chancellor (OC), coordination work with the Office of the Campus Architect (OCA) concerning the cost estimates and with Arch. Nakpil on the plans themselves were carried out. In order to act as guide for future requests for budget, the NNIP was broken down to phases each with a corresponding estimate. OCA and Arch. Nakpil presented costs estimates and these are presented in Appendix H. A main difference between the cost estimates is the inclusion of site development from OCA. This includes fencing, road network and parking that are important for the eventual normal NNIP operations.

The NNIP was then bidded out and construction formally restarted on November 22. This is Phase 2 of the NNIP and the projected duration of construction is one year. The successful bidder is Newco Builders and Development Corporation. The construction of NNIP Phase 2 covers the completion of the first two floors of the Research Wing of the NNIP. The ground floor houses

the Plasma Physics Research lab, the Extended Liquid Crystal Physics Lab, the Computer Physics Lab, the Advanced Physics Lab, the Physical Electronics Lab, an 80-seating capacity classroom, the Machine Shop and a part of the Administration. The second floor contains all the Elementary Physics Labs, a 50-seating capacity classroom, the Lab Supply Room and the Administration. If only Phase 2 is to be made operational, the areas intended for the Machine Shop will be temporarily occupied by Administration while that of the Administration on the 2nd floor will temporarily become the Faculty offices for those who will be holding classes in the NNIP.

The figures related to the project are

Budget from OC	P 30,200,000.00
Less	
Admin Cost	839,000.00
Architect's Fee	1,399,000.00
Net Budget for NNIP Phase 2	P 27,962,000.00
Amount Bidded	P 19,376,000.00
Balance from Budget	P 8,586,000.00

Initially, the discrepancy between the estimate and the amount bidded underwent re-evaluation by the OCA but was eventually awarded to Newco. Also, the NIP plans to request that the balance from the budget of around P 8.5 M be included in Phase 2 as additional works.

NNIP Phase 2 is now an ongoing construction project. There is a weekly meeting held at the site to monitor the progress of the construction. The members of the meeting represent the NIP, Arch. Nakpil, the OCA and Newco. The NIP Director presides over these meetings. The DDFR follows the construction operations closely, so far the activities are:

i) Attending the testing of material samples to be used
ii) Following the discussions during the site inspections which is part of the weekly meetings between the architect's consultants and the contractor on details of parts of the building system
iii) Acting as liaison on behalf of NIP for paperwork between the Contractor and UP
iv) Documenting the construction for NIP file purposes
v) Acting on related matters, i.e. use of the balance from budget, and continuance for the completion the NNIP.

The plans for the furnishings for the NNIP Phase 2 are also being drawn up and initial estimates are placed at around P 3.5M (See Appendix I.) The NIP has already made representation to the OC regarding this and a final estimate is to be submitted by February 2003. Aside from this, there is process of actual transfer to the NNIP. Although there is no current estimate and clear plan as to how this is to be carried out, this item has been brought up during NIP management meetings and during the NIP Faculty Workshop. It has also been mentioned already to the OC.

The DDFR was also entasked to assist in planning and facilitating the Faculty Workshop held in Bolinao last August. Improvements in NIP Llamas Hall include the hiring of an in-house electrician, Mr. Arturo del Rosario, the provision of a bike shed and the replacement of the water closets especially in the women's comfort room. The NIP was able to reuse roofing materials for

the bike shed and the water closets available from discarded items in SPCMO. The NIP also purchased a water pump to make its water supply more dependable.

APPENDIX A. PUBLICATIONS
A1. ISI-abstracted Journals (27)

1. **G. Blantocas**, **H. J. Ramos** & M. Wada, “Extraction and profile analysis of hydrogen-like helium ions in a magnetized sheet plasma”, Rev. Sci. Instrum. 73 (2), pp 976-978 (2002).
2. **H. Ramos** & **R. Awayan**, “Nitride formation using a magnetized sheet plasma source”, Vacuum, **65** (3-4), pp 397-402 (2002).
3. **E.Estacio, M. Bailon, A. Somintac, R. Sarmiento** & **A. Salvador**, "Observation of high junction electric fields in modulation-doped GaAs/AlGaAs heterostructures by room temperature photoreflectance spectroscopy," J Appl Phys 91 (6), pp. 3717-3720 (2002)
4. B.A.Kniehl, **C Palisoc**, & A. Sirlin, "Elimination of threshold singularities in the relation between on-shell and pole widths," Phys Rev D. 66, 057902, 2002.
5. **E Galapon**, "Pauli's theorem and quantum canonical pairs: the consistency of a bounded, self-adjoint time operator canonically conjugate to a Hamiltonian with non-empty point spectrum," Proc. R. Soc. Lond. A 458, pp 451-472 (2002).
6. A. Morales, **D. Yanga** & S. Kurihara, "The hole spectral function in the finite temperature Green's function scheme, " J Superconductivity. 15, pp 277-280 (2002).
7. **E. Galapon**, "Self-adjoint Time Operator is the Rule for Discrete Semibounded Hamiltonians," Proc. R. Soc. Lond. A 458, 2671-2689 (2002)
8. N Hayazawa, **A Tarun** & S Kawata, “Near-Field Enhanced Raman Spectroscopy using Side Illumination Optics”, J Appl Phys 92, 6983 - 6986 (2002)
9. **C Monterola, M Lim,** J Garcia & **C Saloma**, "Feasibility of a Neural Network as Classifier of Undecided Respondents in a Public Opinion Survey," Int. J Public Opinion Res 14 (2) pp. 222-229 (2002).
10. **P. Rodrigo**, **M. Lim** & **C. Saloma**, "Direction-sensitive subwavelength displacement measurements at diffraction-limited resolution," Opt Lett 27, pp. 25-27 (2002)
11. **C Monterola, M Lim,** J Garcia & **C Saloma**, "Accurate forecasting of the undecided population in a public opinion poll," J Forecasting 21, pp 435-449 (2002)
13. **G. Tapang** & **C. Saloma**, "Behavior of the point spread function in photon-limited confocal microscopy," Appl Opt 41, pp. 1534-1540 (2002)
14. **C Saloma**, "Reply to comment of Schins and Muller," Appl Opt 41, 1996-1997 (2002).
15. **M Lim** & **C Saloma**, "Emergence of hysteresis in a network of nonhysteretic agents with continuous responses," Phys. Rev. Lett. 88, 038701 (2002).
16. **G. Tapang** & **C. Saloma**, "Dynamic range enhancement of an optimized 1-bit AD converter," IEEE Trans. Circuits Syst II 49, pp. 42-47 (2002).
17. **VR Daria, J Miranda** & **C Saloma**, "High-contrast images of semiconductor sites via one-photon optical beam induced current imaging and confocal reflectance microscopy," Appl Opt 41, pp. 4157-4161 (2002)
18. **VR Daria**, **C Saloma** & S Kawata, "Excitation with a focused, pulsed optical beam in scattering media: reply to comment," Appl Opt 41, 4652-4654 (2002).
19. **M Lim** & **C Saloma**, " Confocality condition in two-color excitation microscopy with two focused beams," Optics Commun 207, 111-120 (2002).
20. **GJ Perez**, **G Tapang**, **M Lim** & **C Saloma**, "Streaming, disruptive interference and power-law behavior in the exit dynamics of confined pedestrians," Physica A 312/3-4, pp 609-618 (2002).
21. **J Palero, W Garcia** & **C Saloma**, "Two-color (two-photon) excitation fluorescence with two confocal beams and Raman shifter", Opt Commun 211, pp 57-63 (2002).

22. **J Bantang, M Lim, C Monterola** & **C Saloma**, "Gravity-assisted segregation of granular materials of equal mass and size," Phys Rev E 66, 041306 (2002)

23. **C Monterola** & **C Saloma**, "Noise-driven manifestation of learning in mature neural networks" Phys Rev Lett 89, 188102 (2002)
24. **R Pobre** & **C Saloma**, "Radiation force on a nonlinear microsphere by a tightly-focused Gaussian beam," Appl Opt 41, pp. 7694-7701 (2002).
25. **M Soriano, W Oblefias** & **C Saloma**, "Fluorescence spectrum recovery from image color and non-negativity constraint," Opt Express 10, pp. 1458-1464 (2002)
26. BA Kniehl, **C Palisoc**, and L Zwirner, "Associated Production of Heavy Quarkonia and Electroweak Bosons at Present and Future Colliders,," Phys. Rev. D66, 114002 (2002).
27. **A. Tarun**, **MRH Daza**,. N. Hayazawa, Y. Inouye & S. Kawata, "Apertureless optical near-field fabrication using an atomic force microscope on photoresists," Appl Phys Lett 80, pp 3400-3402, (2002).

A2. PROCEEDINGS OF INTERNATIONAL CONFERENCES

Oral presentations (4)

1. E.A. Galapon, *Self-adjoint time operators: What could have we been missing while Pauli's theorem was in force?*, International Conference on Time and Matter, Venice International University, Venice Italy, 11-17 August 2002
2. C. Saloma, "Efficient two-color fluorescence excitation with two confocal beams and a Raman shifter," Proc Focus on Microscopy 2002, Kaohsiung, Taiwan (April 8 - 10, 2002)
3. C. Saloma, "Two-color fluorescence excitation with two confocal beams and a Raman shifter," The Asian Symposium on Biomedical Optics and Photomedicine BOPM2002, Sapporo, Japan (October 21-23, 2002)
4. H. J. Ramos, A. Mendenilla & M. Yambot, *Metal ions from surface production-type multicusp negative ion source*, Proceedings of the International Workshop on Particle Beams and Plasma Interaction on Materials, Chiang Mai, Thailand, January 31-February 1, 2002, pp. 22-24. (oral)

Poster presentations (18)

1. A. Somintac, E.Estacio & A. Salvador, *Observation of Blue Shifted Photoluminescence in stacked InAs/GaAs Quantum Dots*, XII MBE International Conference on Molecular Beam Epitaxy, September 16-20, 2002 in SanFrancisco, California, USA (poster presentation)
2. V. R. Noguera & H. J. Ramos, *Production efficiency of H^- ions from a magnetized sheet plasma source*, Abstracts of the Joint International Plasma Symposium of 6th Asia Pacific Conference on Plasma Science and Technology (APCPST), 15th Symposium on Plasma Science for Materials (SPSM), 4th International Conference on Open Magnetic Systems for Plasma Confinement (OS 2002) and 11th Korea Accelerator and Plasma Research Association (KAPRA), July 1-4, 2002, Jeju Island, Korea, p. 89. (**Received Best Paper Award, poster category**)
3. M Fernandez & H. J. Ramos, *Effect of hyperthermal negative hydrogen ions on silicon substrates*, Abstracts of the 13th international Conference on Ion Beam Modification of Materials, September 1-6, 2002, Kobe, Japan, p. 70. (poster)
4. M. Calix, Z. Domingo, "Monte Carlo Simulation of a Binary Lyotropic Liquid Crystal System, " Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
5. J. Joson, L. Davila, Z. Domingo, "Kinetics of the Non-Isothermal Crystallization of Coco-Based Cholesteryl Ester," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
6. R. Sandagon, M. Estonactoc, O. Fernandez, Z. Domingo, "Electrooptical Properties and Vhr Characteristics of Polymer Network-Stabilized Nematic E7 Liquid Crystal," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
7. C. L. Mahinay, L. Davila, Z. Domingo, L. Cada, "Electro-Optic Characterization of E48:TM74A:PMMA PDCLCs," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
8. B. Rara, C. Macale, Z. Domingo, "Curvature-Elastic Modulus of Soya Lecithin," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)

9. S. Johnson, S. Delica, Z. Domingo, "Liquid Crystal Mixture Based on E48 and Castor Oil," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
10. F. Escario, S. Delica, Z. Domingo, "Surface Anchoring Effects on the Performance of Nematic Liquid Crystals With A Photoconducting Polymeric-Layered Substrate, " Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
11. S. Delica, C. Blanca, "Angular Distribution of Multiply-Scattered Light in a Polymer Dispersed Liquid Crystal: A Monte Carlo Model," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
12. S. Delica, C. Blanca, "Monte Carlo Model of Light Scattering in Polymer Dispersed Liquid Crystal: Polarization Effects," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
13. M. Palamine, C. Macale, M. Estonactoc, S. Delica, Z. Domingo, "Effect of Drug Concentration on the Formation of Membrane Bilayer in Lyotropic System," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
14. O. Fernandez, A. Francia, M. Estonactoc, Z. Domingo, "Electrically Induced Reorientation In A Polymer Network-Stabilized Nematic E7 Liquid Crystal System," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
15. G. Cureg, A. Cruz, L.Cada, Z. Domingo, "Cholesteric Liquid Crystal Formulations (Coconut-Based Cholesteryl Ester & Tm74A): Thermal and Optical Characterization," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
16. A.B. Tumbokon*, L.G. Cada, Z. Domingo, "Formulation of Thermochromic CANCE-E7," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
17. A. Francia Jr., N. Hermosa, G. Naceno, Z. Domingo, "Holographic Gratings in Polymer-LC Composites," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
18. L. Davila, R. Marco, L. Cada, Z. Domingo, "Surface Free Energy and Pretilt Angle of Nematic E7 on Rubbed and/or Unpolarized Uv Irradiated Polyimide," Proc 19th International Liquid Crystal Conference, Edinburgh, U.K (29 June - 6 July 2002)
19. N. Hermosa II, M R Daza, "Storage of Micro-Holograms in a Methyl Red Doped Polymer Dispersed Liquid Crystal", Proc. of the 4th Joint International Symposium on Optical Memory and Optical Data Storage (6-11 July 2002)

A3. DOMESTIC JOURNALS

1. M. Olbinado, L.J. Guerra and R. Sarmago, *Synthesis of Bulk SuperconductingMagnesium Diboride*, Science Diliman Vol 14 (1) pp. 17-20 (2002)

2. Marcos M.S., Soriano M., W. Oblefias, M. Quibilan and C. Saloma, *Color-Texture Image Analysis of Coral Reefs*, Science Diliman 13, 50 (July-Dec 2001).

A3. CONFERENCE PROCEEDINGS
(20th SPP Physics Congress, 23-25 October 2002, Naga City)

1.) Optimum Growth Conditions for Liquid Phase Epitaxial Growth of Superconducting Bi2Sr2CaCu2O8+□ Thin Films Ambanta, I.R.O., Guerra, L.J.D. Cueto, A.V. Sarmago, R.V., *pp.37-40*

2.) Investigation of the Hysteresis Loss Peak in the Temperature Dependence of the AC Magnetic Susceptibility of Bulk MgB2 Olbinado, M.P., Singidas, B.G., Sarmago, R.V., *pp.347-349*

3.) New Definitive Complex AC Magnetic Susceptibility Features of YBCO from an Improved Lock-in Measurement Technique Singidas, B.G., Sarmago, R.V., *pp.256-259*

4.) Confronting the Issue of Phase Drift and Tuning Sarmago, R.V. *pp.*

5.) Synthesis of Mg1-xKxB2 from MgB2 and KCl Powders Olbinado, M.P., *pp.232-235*

6.) Electrical Dissipation and Fluctuation Magnetoconductivity on a Bi2Sr2CaCu2o8+□ Film Hinojales, E.J.M.Dela Cruz. C. Sarmago, R.V., *pp. 360-363*

7.) A New Interpretation on the Meissner transition of Bi-2212 in Ac Magnetic Field Bernaldez, F.L., Sarmago, R.V., *pp.265-268*

8.) Effects of Sintering Time and Temperature on the TC and Microstructure of Bulk MgB2 Olbinado, M.P.,Guerra, L.J.D., Sarmago, R.V., *pp.240-243*

9.) Frequency and Applied Field Dependence of In-phase and Out-of-phase Odd Harmonic Susceptibilities of YBCO Torralba, M.V.S., Sarmago, R.V., *pp.202-205*

10.) Transport Current Effects on Bi2212 Superconducting Transition Ronulo, J.B., Dela Cruz. C.R., Sarmago, R.V., *pp. 264-266*

11.) Magnetoresistance profile of a Bi2Sr2CaCu2O□ Thin film: On the behavior of the potential barrier in the flux creep process Dela Cruz. C.R., Sarmago, R.V., *pp.97-100*

12.) Hall Voltage Sign Reversal in Bi2Sr2CaCu2O8+□ Thin Film Dela Cruz, Aaron Paul C., Dela Cruz. C.R., Sarmago, R.V., *pp.167-169*

13.) Harmonic Susceptibilities of MgB2 Torralba, M.V.S.,Olbinado, M.P., Sarmago, R.V., *pp.367-370*

14.) Calculation of absorption coefficient of strained MBE grown InGaAs/GaAs multiple quantum well by transmission spectroscopy Mateo, J.N., Somintac, A., Estacio, E., Salvador, A., *pp.45-47*

15.) Liquid Phase Epitaxy of Zn-doped GaAs Bautista, K.M.A.N., Casco, M. F., Mateo, J.N., Salvador, A., *pp.105-108*

16.) Self Assembled Epitaxial Growth of Quantum Dots via Molecular Beam Epitaxy Somintac, A., Podpod, A., Estacio, E., Salvador, A., *pp.9-12*

17.) The Effect of Arsenic on MBE-grown Modulation-doped GaAs/AlGaAs Heterostructures Patricio, M.G., Estacio, E., Somintac, A., Podpod, A., Dorilag, R., Salvador, A.A., *pp.236-239*

18.) Confined Power Law Behavior in Holographic Storage with a Nonplanar Reference Beam Guerrero, R. A., Arangcon, R.B., Dungao, J.R., Daza, M.R.H., *pp.226-230*

19.) Holographic animation of two- and three-dimensional images using angle multiplexing in a z-cut Fe-doped (0.05%) LiNbO3 crystal Dungao, J.R., Guerrero, R. A., Daza, Marlon Rosendo H., *pp.60-63*

20.) Effects of Extraction and Lens Voltages in Extracting H- Ions from a Magnetized Sheet Plasma using an ExB Probe Arciaga, M.E., Mendenilla, A.G., Blantocas, G.Q., Ramos, H.J., *pp.182-184*

21.) Prediction of Protein Secondary Structure Using Two-Layered Neural Networks Monterola, Christopher P., Saloma, Caesar A., *pp.280-284*

22.) Microscopic Dynamics in Non-Competitive Complex Adaptive Systems Quito, Marcelino Jr., Monterola, Christopher P., Saloma, Caesar A., *pp.113-116*

23.) Optical Signal and Image Amplification Studies in Dye-Doped Nematic Liquid Crystal E7 Gabayno, J.L.F., Hermosa, N.P. II, Daza, Marlon Rosendo H., *pp.269-272*

24.) Effect of Hologram Size on Image Quality Cadatal, Marilou M., Almoro, Percival F., Daza, Marlon Rosendo H., *pp.83-85*

25.) Surface Alignment Effects on the Structural Behavior of Cholesteric Liquid Crystal TM74A:E48 Mixture (60:40 weight ratio) Muldera, J.E., Hermosa, N.P. II, Domingo, Zenaida B., *pp.41-44*

26.) Surface Profiling of Silicon Wafers Using Digital Speckle Pattern Interferometry (DSPI) Almoro, Percival F., Parañal, P., Daza, Marlon Rosendo H., *pp.429-431*

27.) Holography Using a 639 nm Laser Diode and a Digital Photo-camera Manuel, M.A., Cadatal, Marilou M., Almoro, Percival F., Daza, Marlon Rosendo H., *pp.79-82*

28.) On the range of validity of Hilhorst-type formulae Solis, M.R.C., Esguerra, J.P.H., *pp.32-34*

29.) Third-Order MHD equation: Application to Hartmann Flow Jirkovsky, L., Bo-ot, L., *pp.28-31*

30.) Spin Wave Self-Energies in the Spin Polaron Formulation Pampolina, J.P., Yanga, D.M., Morales, A.A., Jr., *pp.35-36*

31.) Dynamics of Wealth Redistribution Monterola, Christopher, P., Saloma, Caesar A., *pp.195-197*

32.) Allelomimesis: Power-laws in social cluster formation Juanico, D.E., Monterola, Christopher, P., Saloma, Caesar A., *pp. 109-112*

33.) Enhancement of Negative Hydrogen Ions with Xe in a Magnetized Sheet Plasma Cardinal, M.G., Ramos, Henry J., *pp. 491-494*

34.) Decoupled Perturbation in Variational Approach Chan, L.C., *pp.25-27*

35.) Barbie dolls or GI Joes? Delica, S., Joson, J., Arciaga, M.E., Esguerra, J.P.H., *pp. 6-8*

36.) Numerical characterization of focused ultra-short Gaussian light pulses Romallosa, Kristine Marie, Bantang, Johnrob, Saloma, Caesar A., *pp.64-67*

37.) Dynamical features of escape panic: Cellular automata model and experimental verification using mice Perez, G., Tapang, Giovanni, Lim, M., Saloma, Caesar A., *pp. 126-129*

38.) Performance of a Single-Photon Fluorescence Confocal Laser-scanning Microscope Bautista, Godofredo S. Jr., Miranda, Jelda Jayne, Daria, Vincent Ricardo, Saloma, Caesar A., *pp. 57-59*

39.) Wealth Distribution for Different Cooperation Strategies Pulido, M.T., Monterola, Christopher, P., Saloma, Caesar A., *pp.498-500*

40.) Delay Strategies in a Competitive Transportation System Marfil, M., Castro, P., Bantang, Johnrob, Lim, M., Monterola, Christopher, P., Saloma, Caesar A., *pp. 293-294*

41.) Visualization of Color-Texture Images Using Locally Linear Embedding Marcos, S., Soriano, Maricor, Saloma, Caesar A., *pp. 86-89*

42.) Minimum Negativity Constraint Applied to Fluorescence Color Signal Recovery Oblefias, Wilma, Soriano, Maricor, Saloma, Caesar A., *pp. 385-387*

43.) Absolute phase in few-cycle twin-photon pulses Tapang, Giovanni, Saloma, Caesar A., *pp. 68-70*

44.) Multisource Listening is Possibly Enhanced by the Background Violanda, R., Litong-Palima, M., *pp.214-216*

45.) Conceptual Survey in Electricity and Magnetism (CSEM) at the National Institute of Physics Baclig, A.C., Francia, A.Z. Jr., Mahinay, C.L.E., Hermosa, N.P. II, *pp. 313-316*

46.) New Statistical Model for Foreign Exchange Dynamics Castro, P., Bantang, Johnrob, Lim, M., Monterola, Christopher, P., Saloma, Caesar A., *pp. 230-231*

47.) Electro-optic Characteristics of Millisecond Response CANCE-doped Twisted Nematic E7 LC Cell Estonactoc, M.F., Rodrigo, P.J., Hermosa, N., *pp. 170-173*

48.) Spin Dynamics in the Spin Polaron Model at Finite Temperature Pampolina, J.P., Yanga, D.M., Morales, A.A., Jr., *pp.95-96*

49.) Investigation of the optoelectronic properties of an MBE-grown InGaAs/GaAs quantum well light emitting diode Manasan, G., Estacio, E., Somintac, A., Salvador, A., *pp. 381-383*

50.) Measurement of Coefficient of Kinetic Friction using Color Tracking Ibarreta, Rodelio S., Jecong, Julius Federico M., Soriano, Maricor, *pp.466-468*

51.) Determination of exciton binding energy of AlGaAs/GaAs quantum well as a function of well width using photoluminescence setup and x-ray diffraction technique Casco, M. F., Estacio, E., Somintac, A., Guiao, L.C., Ison, C.S., Salvador, A.A. *pp. 384-386*

52.) Dynamics of non-motile populations in environment with limited resources Bantang, Johnrob, Saloma, Caesar A., *pp. 138-141*

53.) Effects of spherical aberration in two-color excitation microscopy with two confocal beams Lim, M., Saloma, Caesar A., *pp.75-78*

54.) Automated analysis of standard behavioral tests on mice using color-based tracking Perez, G., Romallosa, Kristine Marie, Soriano, Maricor, Palmes-Saloma, Cynthia, *pp. 134-137*

55.) Numerical Simulations of Focusing Properties of a Lensed Optical Fiber Pabilona, R.S., Daza, Marlon Rosendo H., *pp.71-74*

56.) Creating computer generated holograms without wave interference Labora, Maritess J., Almoro, Percival F., Daza, Marlon Rosendo H., *pp. 451-453*

57.) Automated Chromosome Counting with Color and Grayscale Microscope Images Roxas, R.M.L., Castro, P.A.A., Soriano, Maricor, Saloma, Caesar A., *pp. 142-145*

58.) Band Structure Calculation of One-Dimensional Photonic Crystal by Finite Element Method Casulla, E.P., Daza, Marlon Rosendo H. *pp.121-124*

59.) Comparison of cross-correlation and ring-wedge feature extraction in fingerprint recognition Mallari, Astra Kristina B., Soriano, Maricor N., Saloma, Caesar A., *pp. 414-418*

60.) Outline extraction from front-view gait video Araullo, A., Miranda, Jelda Jayne, Dagum, L., Soriano, Maricor N., *pp. 146-148*

61.) Three-dimensional imaging of integrated circuit defects by 1-photon optical beam-induced current imaging and confocal reflectance microscopy Miranda, Jelda Jayne, Buenaobra, B., Daria, Vincent Ricardo, Saloma, Caesar A., *pp. 244-248*

62.) Performance comparison of truncation and round-off type sinusoid-crossing sampling, and conventional-amplitude sampling in noise-assisted weak signal detection Cemine, Vernon Julius R., Saloma, Caesar A., *pp. 210-213*

63.) Image Enhancement and Phase Unwrapping of an Interferometric Image Daquiado, F.J.A., Afable, A.B., Tagabuan, J.G., Soriano, Maricor N., *pp. 419-421*

64.) Laser Diode Controller for Undergraduate Physics Laboratories Separa, S.D., Buenaobra, B., *pp.301-304*

65.) FABRICATION OF AN AC MAGNETIC SUSCEPTIBILITY MEASURE-MENT SYSTEM FOR DLSU SOLID STATE PHYSICS LABORATORY Sarmago, R., *394-399*

66.) Pulsed-Laser Deposited TiN2 Coatings On Silicon Substrate Garcia, W., *pp.260-264*

67.) Wet oxidation of AlAs in GaAs and in an AlAs/GaAs multilayer stack Agra, F.A., Somintac, A., Salvador, A.A., *pp.206-209*

68.) Hydrogen Raman Shifter: A Promising Light Source for Two-Color (Two-Photon) Excitation Fluorescence Palero, Jonathan A., Garcia, Wilson O., Saloma, Caesar A., *pp. 252-255*

69.) Cost of Dealing in a Foreign Exchange Market Castro, P.A.A., Lim, M., Monterola, Christopher, P., Saloma, Caesar A., *pp.336-338*

70.) Determination of the Lateral Diffusion Coefficient of Lecithin -Water Systems Using Fluorescence Spectroscopy Dulay, R.H.B., Domingo, Zenaida B., *pp.443-446*

71.) Effect of Curing Conditions and Formulation on the Electro-optic Properties of Polymer Dispersed Cholesteric Liquid Crystal Films Mahinay, C.L.E., Afable, A.B., Domingo, Zenaida B., *pp. 343-346*

72.) Effects of Varying Time and Angle of Unpolarized UV Exposure on the Surface Tension and on the Generated Pretilt Angle of Rubbed Polyimide Films Obias, E.B.R., Marco, R. Jr., Davila, L.T., Domingo, Zenaida B., *pp.101-104*

73.) POLARIZED LIGHT MICROSCOPY STUDY ON THE EFFECT OF CHLORPROMAZINE CONCENTRATION ON MEMBRANE BILAYER FORMATION Palamine, M.T.L., Estonactoc, M.F., Delica, S.F., *pp. 374-376*

74.) Investigation of the Liquid Crystalline Properties of Frog Retinal Rods Nombres, C.C., Domingo, Zenaida B., Cureg, R.G., *pp. 377-381*

75.) Voltage Holding Ratio Characteristics of CANCE-Doped Twisted Nematic E7 Liquid Crystal Sandagon, Ryan, Estonactoc, Melvin F., *pp. 501-503*

76.) Critical Micelle Concentration and Cluster Size Distribution in Binary Lyotropic Liquid Crystal System Calix, Marie Anne Michelle, Domingo, Zenaida B., *pp.198-201*

77.) Pulse-Retrieval as a High-Dimensional Problem for Generalized Simulated Annealing Alonzo, C.A., Daza, Marlon Rosendo H., *pp.289-292*

78.) Second Derivative of Langmuir Probe Traces for Particle Temperature Measurements in a Magnetized Sheet Plasma Source Noguera, Virginia R., Ramos, Henry J., *pp.425-428*

79.) Production Efficiency of H- ions from a Magnetized Sheet Plasma Source Noguera, Virginia R., Ramos, Henry J., *pp.487-490*

80.) Infrared Emission Microscope as a Failure Analysis Tool in the localization of short and open interconnects Mendenilla, A.G., *pp. 155-158*

81.) Existence and Uniqueness Theorem for the Time Kernel Equation Domingo, Herbert B., Galapon, Eric A., *pp.13-16*

APPENDIX B. OFFICIAL TRAVELS & FOREIGN POSTINGS

B1. International conferences

1. Henry J. Ramos (oral presentation)
International Workshop on Particle Beam and Plasma Materials Interaction
30 January - 03 February 2002; Chiangmai, Thailand
Funding: Workshop organizers

2. Jose A. Magpantay
Humboldt Colloquium
11-13 March 2002; Vietnamese Germany Centre, Hanoi, Vietnam
Funding: Colloquium organizers, PhP1500 pre-travel (UP Faculty Development Fund)

3. Caesar A. Saloma (oral)
Focus on Microscopy 2002
06-11 April 2002, Kaoshiung, Taiwan
Funding: PhP 40,045.20 + 1,500.00 pre-travel (UP Faculty Development Fund)

4. Zenaida B. Domingo (poster)
19th International Liquid Crystal Conference
29 June - 6 July 2002; Edinburg, Scotland, U.K.
Funding: P75,540.00 (UP Faculty Development Fund)

5. Jose Perico H. Esguerra
33rd International Physics Olympiad
22-31 July 2002; Bali, Indonesia
Funding: DOST-SEI

6. Nathaniel P. Hermosa, II (poster)
4th Joint International Symposium on Optical Memory and Optical Storage
6-11 July 2002 Walkolon, Hawaii,U.S.A
Funding: P84285.90 (CHED CoE)

7. Eric A. Galapon (oral)
International Colloquium in Time and Matter
11-17 August 2002; Venice International University, Venice, Italy
Funding: P76102.50 (UP Faculty Development Fund)

8. Caesar P. Palisoc (oral)
2002 Hadron Collider Physics Conference
28-30 September 2002; Karisruhe, Germany
Funding: USD1957.00 (CHED CoE Grant)

9. Arnel A. Salvador (poster)
XII International Conference on Molecular Beam Epitaxy
15-20 September 2002; San Francisco, California, USA
Funding: USD1960.00 (CHED CoE Grant)

10. Caesar A. Saloma (Invited)
The Asian Symposium on Biomedical Optics and Photomedicine BOPM2002
21-23 October 2002; Sapporo, Japan
Funding: Conference organizers

B2. Other foreign postings

Rex S. Absin
PhD studies 01 June 2001 - 31 May 2002
La Trobe University, Victoria, Australia

Carlo Mar Y. Blanca
Postdoctoral research 15 October 2001 - 31 December 2002
Max Planck Institute for Biophysical Chemistry, Gottingen, Germany

Vincent Ricardo M. Daria
Post-doctoral research 1 November 2001 - 31 October 2002
Risoe National Laboratory, Roskilde, Denmark

Maricor N. Soriano
Collaborative research in color and texture 17 May 2002 - 06 June 2002
Machine Vision Group, Dept. of Electrical Engineering, Univ. of Oulu, Finland

Cristine DLR. Villagonzalo
Postdoctoral research 1 August 2001 - 31 October 2002
Dept. of Physics, West Virginia University

Michael HLS Wang
Postdoctoral research 1 June 2001 - 31 May 2003
Fermi National Accelerator Laboratory
Batavia, Illinois

Caesar Palisoc
Postdoctoral research 1 June 2001 - 31 May 2002; 1 Oct 2002 - 31 December 2002
Second Institute for Theoretical Physics, University of Hamburg

B3. Domestic conference

NIP Participants in the 20th SPP Physics Congress in Naga City on 23-25 October 2002
(Support from UP Faculty Development Fund: PhP4,500 per person)

1. Marko E. Arciaga
2. Alvin Baclig
1. Johnrob Bantang
2. Kristine Ma. Angelus Bautista
3. Luis Ma. Bo-ot
4. Marilou Cadatal
5. Edmundo Casulla
6. Julius Vernon Cemine
7. Lorenzo Chan
8. Clarina de la Cruz
9. Marlon Rosendo Daza
10. Serafin Delica
11. Jose Perico Esguerra
12. Alberto Francia, Jr.
13. Jacque Lynn Gabayno
14. Nathaniel Hermosa, II
15. Joihren Joson
16. Dranreb Earl Juanico
17. Marites Labora
18. May Lim
19. Cheryll Lei Mahinay
20. Ayn Hazel Manuel
21. Ma. Sheila Angeli Marcos
22. Christopher Monterola
23. Wilma Oblefias
24. Jonathan Palero
25. Marisciel Palima
26. Henry J. Ramos
27. Caesar Saloma
28. Arnel Salvador
29. Roland Sarmago
30. Armando Somintac
31. Maricor Soriano
32. Giovanni Tapang

APPENDIX C. RESEARCH PROJECTS IN 2002

C1. Funded by NIP Research Funds (1 January 2002 - 31 December 2002)

Amount of Funding: PhP 48,000 (Professor), PhP42,000 (Associate Professor), PhP36,000 (Assistant Professor), PhP30,000 (Instructor)

Project Leader	Project Title
1. Percival F. Almoro	*Surface Profiling Using Holography*
2. Luis Ma. T. Bo-ot	*Third-Order MHD Equation: Application to Hartmann Flow*
3. Lorenzo C. Chan	*A Quick Perturbation Approach for High Orders*
4. Marlon Rosendo H. Daza	*Transient and Non-local Laser-Induced Birefringence Change in a Dye-Doped Nematic Liquid Crystal*
5. Zenaida B. Domingo	*Fabrication and Characterization of PDLC Windows in the Visible Regime with Variations*
6. Jose Perico H. Esguerra	*Non-Perturbative Methods in Statistical Mechanics*
7. Eric A. Galapon	*The Quantum Dynamics of Characteristic Time Operators*
8. Nathaniel P. Hermosa, II	*Nonlinear Optical Phenomena in Liquid Crystal*
9. May T. Lim	*Confocality Condition in Two-Color Excitation Microscopy with Two-Focused Excitation Beam*
10. Jose A. Magpantay	*Gauge Theories and Quantization*
11. Christopher P. Monterola	*Allelomimesis as a Generic Clustering Mechanism for Interacting Agents*
12. Henry J. Ramos	*Production Efficiency Measurements on a Magnetized Sheet Plasma Source*
13. Caesar A. Saloma	*Two-Color (Two Photon) Fluorescence Excitation with a Raman Shifte*r
14. Arnel A. Salvador	*Exciton Binding Energies in GaAs/AlGaAs Quantum Wells*
15. Roland V. Sarmago	*AC Magnetic Susceptibility Measurements on YBCO*
16. Armando Somintac	*Epitaxial Growth of InAs Quantum Dots Via Molecular Beam Epitaxy*
17. Maricor N. Soriano	*Gait Analysis from Frontal View Video*
18. Giovanni A. Tapang	*Absolute Phase in Few-Cycle Twin-Photon Pulses*
19. Danilo M. Yanga	*Spin Density Waves (SDW) in the Spin Polaron*

C2. Research Grants

Roland V. Sarmago,
Magnetic Susceptibility Measurements in YBCO
PhP 350,000 (October 2001-October 2002)
Office of the Vice-Chancellor for Research and Development, UPD

Roland V. Sarmago
A Study on the Dependence of the AC Magnetic Susceptibility of YbcO on Applied Field and Frequency Distribution in the Absence of a DC Field Bias
PhP 168,000 (1 April 2002 - 31 March 2003)
UP System Creative and Research Scholarship Fund

Arnel A. Salvador,
Program for the Development of III-V Optoelectronic Devices and Optoelectronic Integrated Circuits
PhP 7,435,456.00 (November 2001- October 2002)
Philippine Council for Advanced Science and Technology Research and Development

Arnel A. Salvador
Molecular Beam Epitaxial Growth and Device Fabrication of InGaAs Optoelectronic Devices
PhP 172,000 (1 April 2002 - 31 March 2003)
UP System Creative and Research Scholarship Fund

Henry J. Ramos
Prototype Plasma Devices for Industrial Applications
PhP 4 M [Year 3 (2002)]
Department of Science and Technology-Grants in Aid

Henry J. Ramos
Deposition of Amorphous Silicon-based material Using a Magnetized Sheet Plasma Negative Ion Source
PhP201,000 (1 Dec 2001 - 30 Nov 2002)
UP System Creative and Research Scholarship Fund

Danilo Yanga
The Spin Polaron Theory as a Microscopic Mechanism of High Superconductivity
PhP 209,000 (1 Dec 2001 - 30 Nov 2002)
UP System Creative and Research Scholarship Fund

Danilo Yanga
Spin Polarons
PhP 220,000 (April 2002 – March 2003)
National Research Council of the Philippines

Jose Magpantay
Quantization of Open Systems
PhP 209,000 (1 April 2002 - 31 March 2003)
UP System Creative and Research Scholarship Fund

Marisciel L. Palima
Listening Performance is Possibly Aided Under Embedded Speech Conditions
PhP 161, 000 (Oct. 1, 2002-Sept. 30, 2003)
Office of the Vice-Chancellor for Research and Development, UPD

Maricor Soriano

Spectra from Color: Converting a Microscope Into a Multispectral Imager with a Color Camera
PhP 135, 000 (2002)
UP System Creative and Research Scholarship Fund

Caesar Saloma
How accurate can unsupervised neural networks solve differential equations?
PhP 200,000 (1 December 2001 - 30 November 2002)
UP System Creative and Research Scholarship Fund

May Lim (PhD Thesis Grant)
Emergence and detection of nonlinear behavior in complex systems
PhP60, 000 (1 Oct 2002 - 30 Sept 2003)
Office of the Vice-Chancellor for Research and Development, UPD

Ma. Angeli Sheila Marcos (MS Thesis Grant)
Feature Extraction of Coral Reef Images
PhP 30,000 (October 2002 - April 2003)
Office of the Vice-Chancellor for Research and Development, UPD

Stephen Daedalus Separa (MS Thesis Grant)
Stochastic Resonance in Laser Diode Systems with Optical Feedback
PhP 30,000 (October 2002 - April 2003)
Office of the Vice-Chancellor for Research and Development, UPD

Michelle Calix (MS Thesis Grant)
Self-assembly of a Binary Liquid Crystalline System
PhP 30,000 (End: October 2002)
Office of the Vice-Chancellor for Research and Development, UPD

APPENDIX D: NIP Graduates in 2002

D1. PhD graduates (4)

2nd Semester, AY 2001-2002

Christopher P. Monterola
Neural Networks: New Insights and Applications

Romeric F. Pobre
Analysis of the Radiation Force on a Kerr Micrometer-Sized Sphere Due to a Highly-Focused Gaussian Beam

Giovanni A. Tapang
Noise in the Detection and Processing of Weak Signals: Trade-Offs and Benefits

1st Semester AY 2002-2003

Wilson O. Garcia
Temporal Coherence Control of a Q-Switched Frequency Tripled (355 nm) Nd:YAG Pumped Hydrogen Raman Shifter

D2. MS graduates (9)

2nd Semester, AY 2001-2002

Johnrob Y. Bantang
Gravity-Assisted Segregation of Elastic Granular Materials Having the Same Mass and Size

Elmer S. Estacio
Photoreflectance Spectroscopy of GaAs/ AlGaAs Heterostructures

Peter John L. Rodrigo
Motion Sensing at Diffraction-Limited Resolution with Optical-Feedback Semiconductor Laser Michelson Interferometer

1st Semester AY 2002-2003

Carlo Amadeo C. Alonzo
Comparison of Pulse-Retrieval Algorithms Applied to Simulated Frequency-Resolved Optical Gating (FROG) Spectrograms

Marie Anne Michelle S. Calix
Self-Assembly of a Binary Lyotropic Liquid Crystalline System

Kim A. Gargar
Numerical and Analytical Studies on Model Gravitating Systems

Christine S. Ison
Optical Properties of GaAs/AlGaAs Multiple Quantum Wells Probed by Reflectance Spectroscopy

Jonathan A. Palero
Two-Color Two-Photon Excitation Fluorescence with Two Confocal Beams and a Raman Shifter

Michelee G. Patricio
Arsenic Flux Dependence of the Mobility and Junction Electric Field of Modulation- Doped GaAs/AlGaAs Heterostructures

D3. BS Applied Physics Graduates (14)

2nd Semester AY 2001-2002

Marko E. Arciaga
Investigation of ExB Probe Parameters for Optimum Extraction of H-Ion from a Magnetized Sheet Plasma Source

Kristin Maria Angelus N. Bautista
Growth and Characterization of Liquid Phase Epitaxial p-Gallium Arsenide Layers and pn-Junction

Marilou M. Cadatal
Theory and Applications of Phase-Shifting Digital Holography

Ma. Gracita C. Cardinal
Enhancement of Negative Hydrogen Ion Production with Xe Gas in a Magnetized Sheet Plasma

Vernon Julius R. Cemine
Performance of Sinusoid-Crossing Sampling in Noise-Assisted Weak Signal Detection

Jade R. Dungao
Holographic Animation of Two-and Three-Dimensional Images Using Angle-Multiplexing in a Z-Cut Fe-Doped (0.05%) $LiNbO_3$ Crystal

Melvin F. Estonactoc
Electro-Optic Response of Directly Addressed Twisted-Nematic Liquid Crystal (E7-CANCE) Cells on Driving Voltage Amplitude and Frequency

Jacque Lynn F. Gabayno
Signal Amplification in Dye-Doped Nematic Liquid Crystal E7

Joselito E. Muldera
Structural Behavior of Cholesteric Liquid Crystal TM75A and TM 74a:E48 Mixture (60:40) with Different Surface Alignment Layers

Rowanie A. Nakan
Diamond/DLC Deposition on Si Using $H_2/CH_4/O_2$ Gas Mixture via d.c. plasma CVD

Wilma R. Oblefias
Reconstruction of Fluorescent Color Signal Using Image Color and Principal Component Analysis

Ojie L. Santillan
Effect of an Extractor Electrode on Ion Beam Focusing in a Plasma Sputter-Type Negative Ion Source

Summer 2002

Oamar Nanaig Y. Gianan
Ultrasound Imaging Simulation Using Exact Spatial Impulse Response Solutions and Neural Networks

1st Semester AY 2002-2003

Roselyn S. Pabilonia
Numerical Simulations of Focusing Properties of a Lensed Optical Fiber

D4. BS Physics Graduates (9)

2nd Semester AY 2001-2002

Dranreb Earl O. Juanico
Allelomimesis: A Simple Mechanism for Self-Organized Aggregation

Virginia R. Noguera
Sheet Plasma Negative Ion Source Production Efficiency Measurements Using Second Derivative of I-V Traces

Jay Erickson C. Tio
Simulation of a One Dimensional Photonic Crystal with Defects

Summer 2002

Herbert B. Domingo
The Time of Arrival Quantum-Classical Correspondence Problem for Arbitrary Arrival Point

Maylene M. Gadjali
Gamma Radiation Effects on Thermotropic Transitions of Erythrocyte Lipids

Vallerie Ann A. Innis
Structural Effects of Estradiol on the Mitochondrial Membranes of Brain Cells of Mice Irradiated in Utero

Grace Anne K. Naceno
Morphology of the Holographic Gratings in Dye-Doped Polymer Dispersed Liquid Crystals

1st Semester AY 2002-2003

Ma. Adoracion P. Manuel
Holography Using a 639 nm Laser Diode

Jennifer P. Ranay
Investigation of Hydrogen Plasma Parameters for Negative Hydrogen Ion Extraction in a Plasma Sputter-Type Negative Ion Source

Appendix E: Revised Curriculum Checklists (Dr R Banzon)

Revised Curriculum for Bachelor of Science in Physics
(Effective First Semester 2002-2003)

First Semester	**First Year**	**Second Semester**	
Math 14 (Plane Trigonometry)*	3	Physics 101 (Fundamental Physics I)	4
Math 53 (Elem. Analysis I)*	5	Physics 101.1 (Fund. Physics I Lab.)	1
GE (Social Science & Philosophy)	3	Math 54 (Elem. Analysis II)*	5
GE (Social Science & Philosophy)	3	Geology 11 (Princ. of Geology)	3
GE (Arts & Humanities)	3	Geology 11.1 (Lab in Princ. of Geology)	1
C.M.T.	(1.5)	GE (Arts & Humanities)	3
P.E.	(2)	C.M.T.	(1.5)
		P.E.	(2)
	17		17
First Semester	**Second Year**	**Second Semester**	
Physics 102 (Fund. Physics II)	4	Physics 103 (Fund. Physics III)	4
Physics 102.1 (Fund. Physics II Lab.)	1	Physics 103.1 (Fund. Physics III Lab.)	1
Physics 111 (Mathematical Physics I)	3	Physics 112 (Mathematical Physics II)	3
Math 55 (Elem. Analysis III)	3	Math 121.1 (Elem. Diff. Equations)	3
Chemistry 16 (General Chemistry I)	5	Chemistry 17 (General Chemistry II)	5
GE (Social Science & Philosophy)	3	GE (Social Science & Philosophy)	3
C.M.T.	(1.5)	C.M.T.	(1.5)
P.E.	(2)	P.E.	(2)
	19		19
First Semester	**Third Year**	**Second Semester**	
Physics 104 (Modern Physics I)	4	App Physics 155 (Comp. Methods in	4
Physics 104.1 (Modern Physics I Lab.)	1	Physics)	4
Physics 113 (Mathematical Physics III)	3	App Physics 181 (Physical Electronics I)	3
Physics 121 (Theoretical Mechanics I)	3	Physics 122 (Theoretical Mechanics II)	3
Physics 131 (Electromagnetic Theory I)	3	Physics 132 (Electromagnetic Theory II)	3
GE (Social Science & Philosophy)	3	Physics 141 (Quantum Physics I)	4
	17		17
First Semester	**Fourth Year**	**Second Semester**	
Physics 114 (Mathematical Physics IV)	3	Biology 11 (Fund. of Biology I)	5
Physics 142 (Quantum Physics II)	3	Physics/App Physics Elective**	3-5
Physics 165 (Optical Physics)	3	Physics 151 (Statistical Physics I)	3
Physics 170 (Condensed Matter)	3	Physics 180 (Nuclei and Particles)	3
Physics 191 (Experimental Physics I)	4	Physics 192 (Experimental Physics II)	3
GE (Arts & Humanities)	3		–
	19		17-19
First Semester	**Fifth Year**	**Second Semester**	
Physics 152 (Statistical Physics II)	3	Physics 196 (Undergrad. Seminar)	1
Physics 199 (Undergrad. Research)	3	Physics 200 (Undergrad. Thesis)	3
Physics/App Physics Elective**	3-5	Science/Math Elective***	3-5
GE (Math, Science & Technology)	3	GE (Arts & Humanities)	3
GE (Arts & Humanities)	3	GE (Math, Science & Technology)	3
		P.I. 100	3
	15-17		16-18

Total Number of Units: 173-181

*Math 14 and Math 53 are to be taken together provided the student has passed the APE in Math 11. Otherwise the student must take Math 17 in the First Year/First Semester (in place of Math 14 and Math 53); Physics 71, Physics 71.1 and Math 53 in the First Year/Second Semester (in place of Physics 101, Physics 101.1 and Math 54); and Math 54 in the immediately following Summer Session.

**May be chosen from Physics 135 (Introductory Plasma Physics), Physics 161 (Introductory Laser Physics), Physics 195 (Special Topics), or App Physics courses.

***May be chosen, upon the consent of the adviser, from courses in natural sciences or mathematics.

Revised Curriculum for Bachelor of Science in Applied Physics (Materials Physics)
(Effective First Semester 2002-2003)

First Semester	**First Year**	**Second Semester**	
Math 14 (Plane Trigonometry)*	3	Physics 101 (Fundamental Physics I)	4
Math 53 (Elem. Analysis I)*	5	Physics 101.1 (Fund. Physics I Lab.)	1
GE (Social Science & Philosophy)	3	Math 54 (Elem. Analysis II)*	5
GE (Social Science & Philosophy)	3	Geology 11 (Princ. of Geology)	3
GE (Arts & Humanities)	3	Geology 11.1 (Lab in Princ. of Geology)	1
C.M.T.	(1.5)	GE (Arts & Humanities)	3
P.E.	(2)	C.M.T.	(1.5)
		P.E.	(2)
	17		17
First Semester	**Second Year**	**Second Semester**	
Physics 102 (Fund. Physics II)	4	Physics 103 (Fund. Physics III)	4
Physics 102.1 (Fund. Physics II Lab.)	1	Physics 103.1 (Fund. Physics III Lab.)	1
Physics 111 (Mathematical Physics I)	3	Physics 112 (Mathematical Physics II)	3
Math 55 (Elem. Analysis III)	3	Math 121.1 (Elem. Diff. Equations)	3
Chemistry 16 (General Chemistry I)	5	Chemistry 17 (General Chemistry II)	5
GE (Arts & Humanities)	3	GE (Social Science & Philosophy)	3
C.M.T.	(1.5)	C.M.T.	(1.5)
P.E.	(2)	P.E.	(2)
	19		19
First Semester	**Third Year**	**Second Semester**	
Physics 104 (Modern Physics I)	4	Physics 105 (Modern Physics II)	3
Physics 104.1 (Modern Physics I Lab.)	1	App Physics 155 (Comp. Methods in	4
Physics 113 (Mathematical Physics III)	3	Physics)	4
Physics 121 (Theoretical Mechanics I)	3	App Physics 181 (Physical Electronics I)	3
Physics 131 (Electromagnetic Theory I)	3	Chemistry 28 (Quant. Inorg. Analysis)	2
E.S. 11 (Statics of Rigid Bodies)	3	Chemistry 28.1 (Quant. Inorg. Analysis Lab.)	3
		E.S. 13 (Mech. of Deformable Bodies)	
	17		19
First Semester	**Fourth Year**	**Second Semester**	
App Physics 173 (Solid State Physics)	3	App Physics 171 (Introd. Crystallography)	3
Physics 191 (Experimental Physics I)	4	App Physics 175 (Materials Physics I)	3
Chemistry 153 (Physical Chemistry II)	3	Physics 192 (Experimental Physics II)	3
Chemistry 153.1 (Physical Chemistry II Lab.)	2	Chemistry 112 (Inorganic Chemistry)	3
Geology 40 (Elementary Mineralogy)	4	Biology 11 (Fund. of Biology I)	5
MetE 143 (Elements of Materials Science)**	3		
	19		17
First Semester	**Fifth Year**	**Second Semester**	
App Physics 176 (Materials Physics II)	3	Physics 196 (Undergrad. Seminar)	1
App Physics 199 (Undergrad. Research)	3	Physics 200 (Undergrad. Thesis)	3
GE (Math, Science & Technology)	3	GE (Math, Science & Technology)	3
GE (Arts & Humanities)	3	GE (Arts & Humanities)	3
GE (Social Science & Philosophy)	3	GE (Social Science & Philosophy)	3
		P.I. 100	3
	15		16

Total Number of Units: 175-177

*Math 14 and Math 53 are to be taken together provided the student has passed the APE in Math 11. Otherwise the student must take Math 17 in the First Year/First Semester (in place of Math 14 and Math 53); Physics 71, Physics 71.1 and Math 53 in the First Year/Second Semester (in place of Physics 101, Physics 101.1 and Math 54); and Math 54 in the immediately following Summer Session.

* * Incorporates previously approved curricular revisions of the College of Engineering (e.g., renaming of E.S. 31 to MetE 143).

Revised Curriculum for Bachelor of Science in Applied Physics (Instrumentation Physics)
(Effective First Semester 2002-2003)

First Semester	**First Year**	**Second Semester**	
Math 14 (Plane Trigonometry)*	3	Physics 101 (Fundamental Physics I)	4
Math 53 (Elem. Analysis I)*	5	Physics 101.1 (Fund. Physics I Lab.)	1
GE (Social Science & Philosophy)	3	Math 54 (Elem. Analysis II)*	5
GE (Social Science & Philosophy)	3	Geology 11 (Princ. of Geology)	3
GE (Arts & Humanities)	3	Geology 11.1 (Lab in Princ. of Geology)	1
C.M.T.	(1.5)	GE (Arts & Humanities)	3
P.E.	(2)	C.M.T.	(1.5)
		P.E.	(2)
	17		17
First Semester	**Second Year**	**Second Semester**	
Physics 102 (Fund. Physics II)	4	Physics 103 (Fund. Physics III)	4
Physics 102.1 (Fund. Physics II Lab.)	1	Physics 103.1 (Fund. Physics III Lab.)	1
Physics 111 (Mathematical Physics I)	3	Physics 112 (Mathematical Physics II)	3
Math 55 (Elem. Analysis III)	3	Math 121.1 (Elem. Diff. Equations)	3
Chemistry 16 (General Chemistry I)	5	Chemistry 17 (General Chemistry II)	5
GE (Arts & Humanities)	3	GE (Social Science & Philosophy)	3
C.M.T.	(1.5)	C.M.T.	(1.5)
P.E.	(2)	P.E.	(2)
	19		19
First Semester	**Third Year**	**Second Semester**	
Physics 104 (Modern Physics I)	4	Physics 105 (Modern Physics II)	3
Physics 104.1 (Modern Physics I Lab.)	1	App Physics 155 (Comp. Methods in Physics)	4
Physics 113 (Mathematical Physics III)	3	App Physics 181 (Physical Electronics I)	4
Physics 121 (Theoretical Mechanics I)	3	Physics 132 (Electromagnetic Theory II)	3
Physics 131 (Electromagnetic Theory I)	3	EEE 7 (Essentials of Elect. Eng'g. II)**	3
EEE 6 (Essentials of Elect. Eng'g. I)**	4		
	18		17
First Semester	**Fourth Year**	**Second Semester**	
App Physics 173 (Solid State Physics)	3	Biology 11 (Fund. of Biology I)	5
App Physics 182 (Physical Electronics II)	4	App Physics 185 (Instru. Physics I)	4
Physics 165 (Optical Physics)	3	Physics 192 (Experimental Physics II)	3
Physics 191 (Experimental Physics I)	4	ECE 123 (Digital Instru. & Control	3
EEE 101 (Control Systems Theory)**,***	3	Tech.)**,***	3
		GE (Arts & Humanities)	
	17		18
First Semester	**Fifth Year**	**Second Semester**	
Physics 161 (Introductory Laser Physics)	3	Physics 196 (Undergrad. Seminar)	1
App Physics 186 (Instru. Physics II)	4	App Physics 200 (Undergrad. Thesis)	3
App Physics 199 (Undergrad. Research)	3	GE (Arts & Humanities)	3
GE (Math, Science & Technology)	3	GE (Social Science & Philosophy)	3
GE (Social Science & Philosophy)	3	GE (Math, Science & Technology)	3
		P.I. 100	3
	16		16

Total Number of Units: 174-176

*Math 14 and Math 53 are to be taken together provided the student has passed the APE in Math 11. Otherwise the student must take Math 17 in the First Year/First Semester (in place of Math 14 and Math 53); Physics 71, Physics 71.1 and Math 53 in the First Year/Second Semester (in place of Physics 101, Physics 101.1 and Math 54); and Math 54 in the immediately following Summer Session.

**Incorporates previously approved curricular revisions in the EEE program (e.g., renaming of course EE 6 to EEE 6, etc.)

***Or equivalent courses that cover the same range of topics (e.g., App Physics 195, etc.)

Appendix F: NIP Enrolment and Number of Graduates Data

1. First Semester AY 2001-2002

Course	*1st Year*		*2nd Year*		*3rd Year*		*4th Year*		*5th Year*		*6th Year*		*7-8th Year*		*Total*
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Physics	14	39	15	18	9	20	6	8	5	3	3	4	2	1	147
App Physics	20	25	14	23	16	15	9	11	9	15	1	1	6	2	167
Subtotal	34	64	29	41	25	35	15	19	14	18	4	5	8	3	
Total	98		70		60		34		32		9		11		314

Number of graduates at the end of the academic year: 19
4 (Physics) + 15 (App Physics)

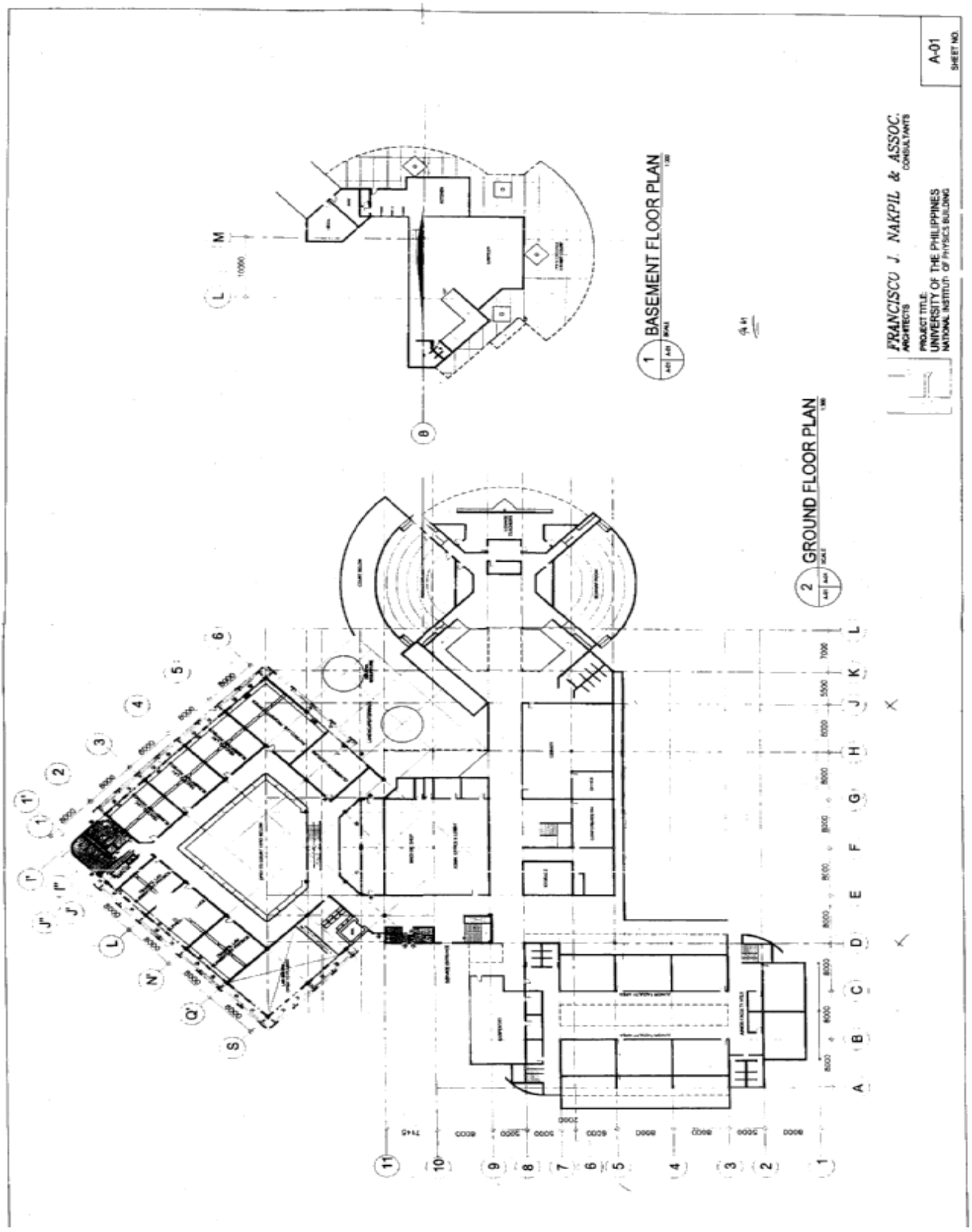
2. First Semester AY 2002-2003

Course	*1st Year*		*2nd Year*		*3rd Year*		*4th Year*		*5th Year*		*6th Year*		*7-8th Year*		*Total*
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
Physics	28	29	11	28	9	13	7	14	7	7	3	5	2	2	165
App Physics	17	30	19	20	9	16	12	14	6	9	4	6	2	0	164
Subtotal	45	59	30	48	18	29	19	28	13	16	7	11	4	2	
Total	104		78		47		47		29		18		6		329

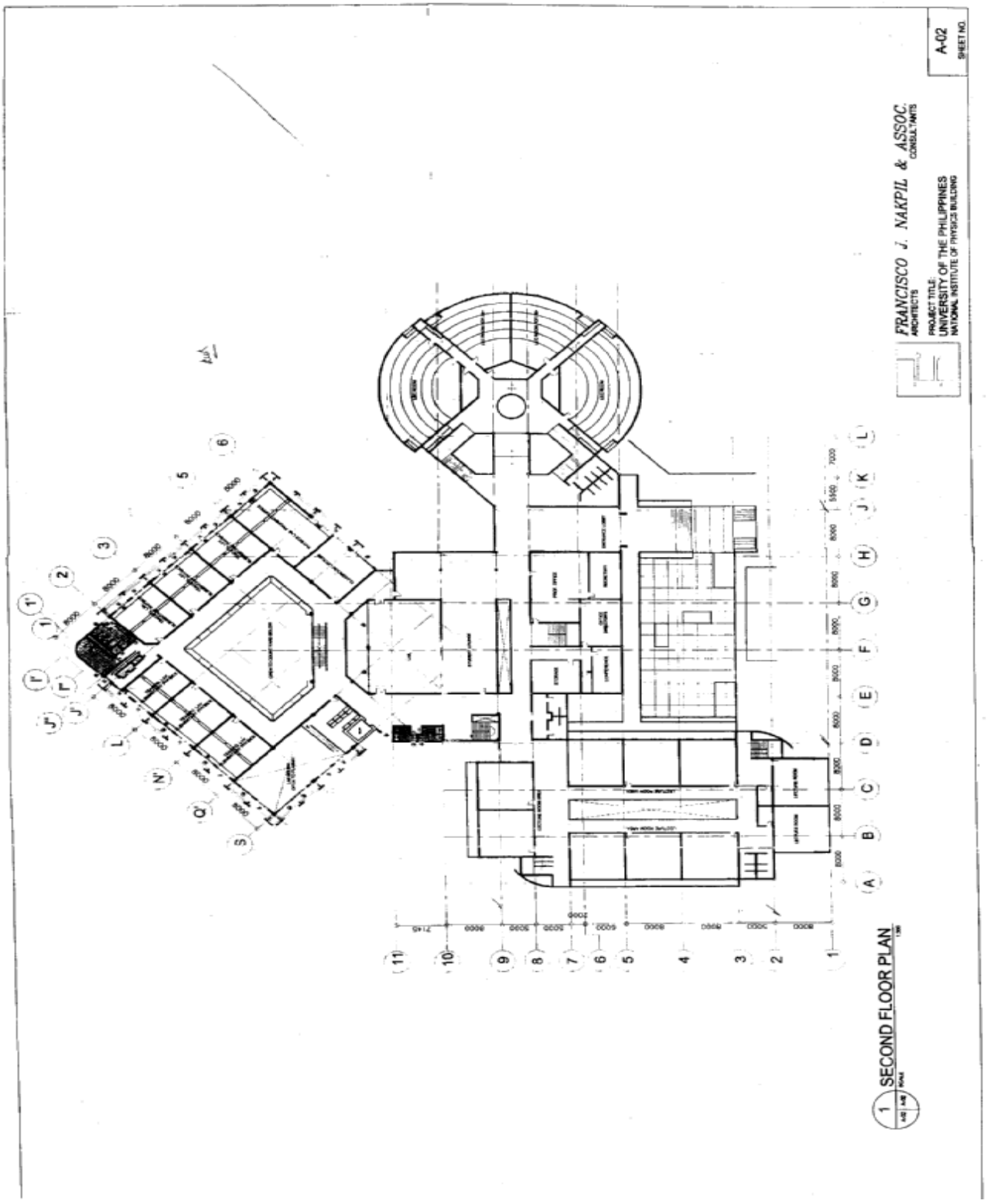
Number of graduates at the end of the term: 3
2 (Physics) + 1 (App Physics)

APPENDIX G – NNIP Building Plans

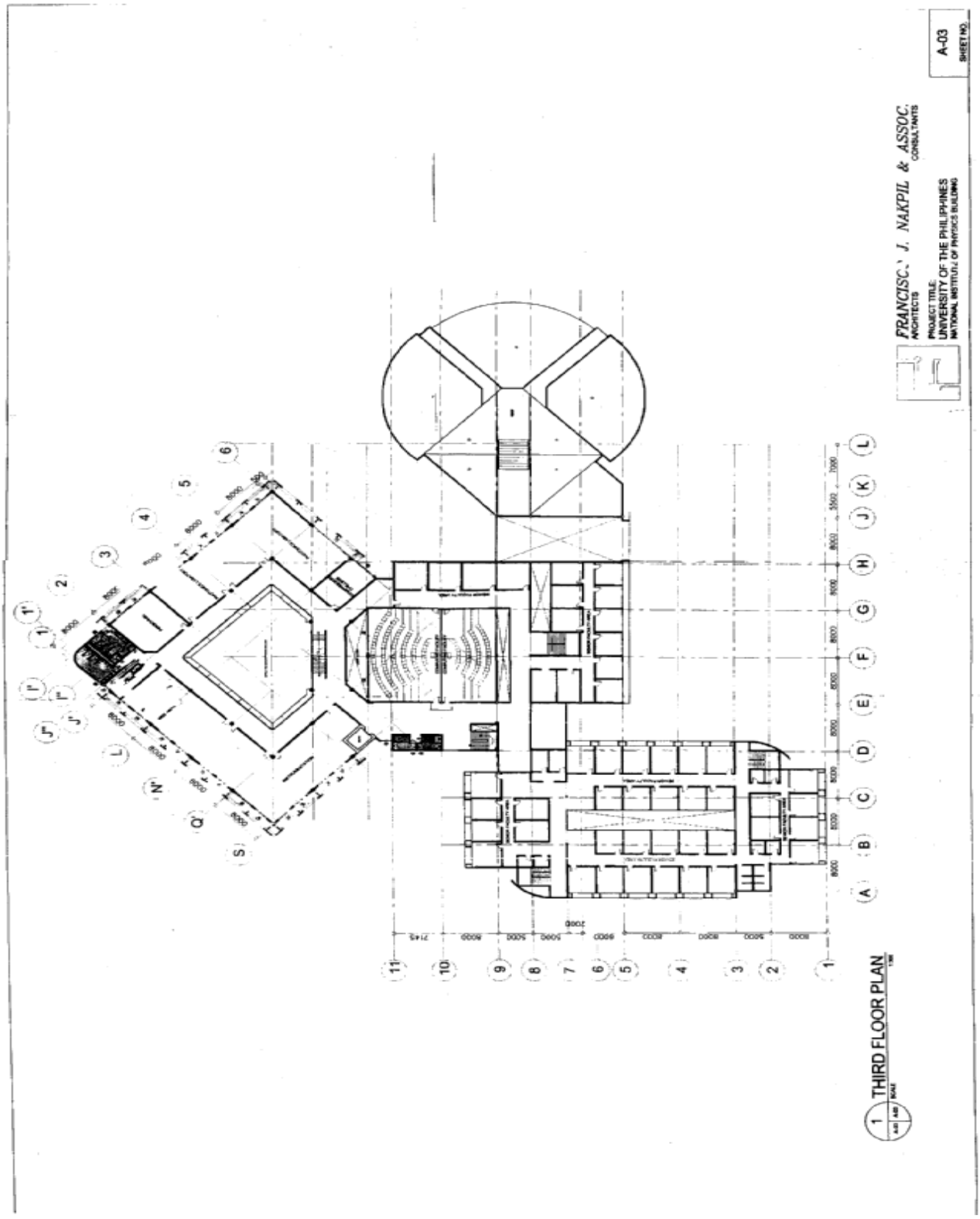
New NNIP Building Plans and Elevation
Ground Floor Plan.



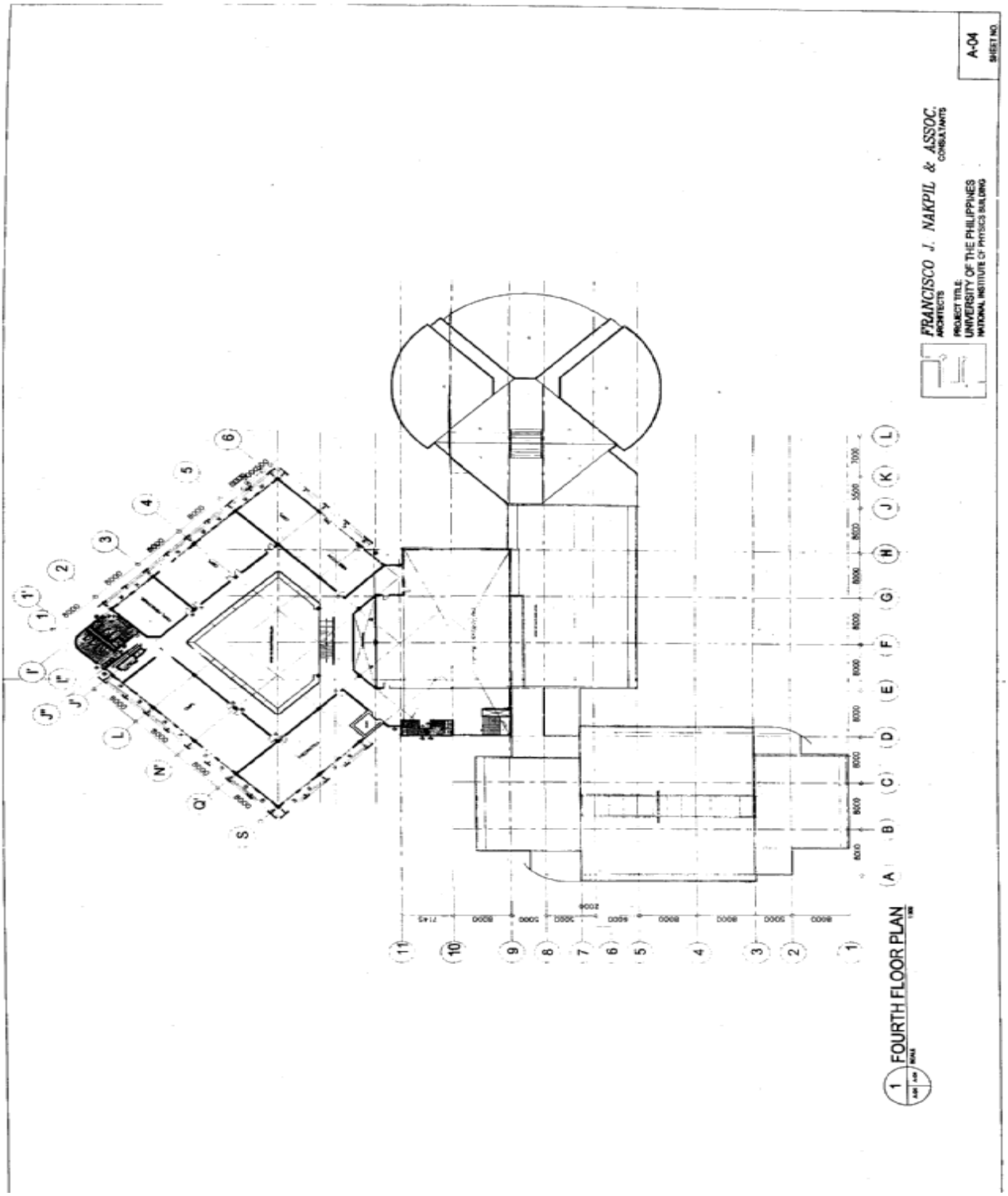
New NNIP Building Second Floor Plan.



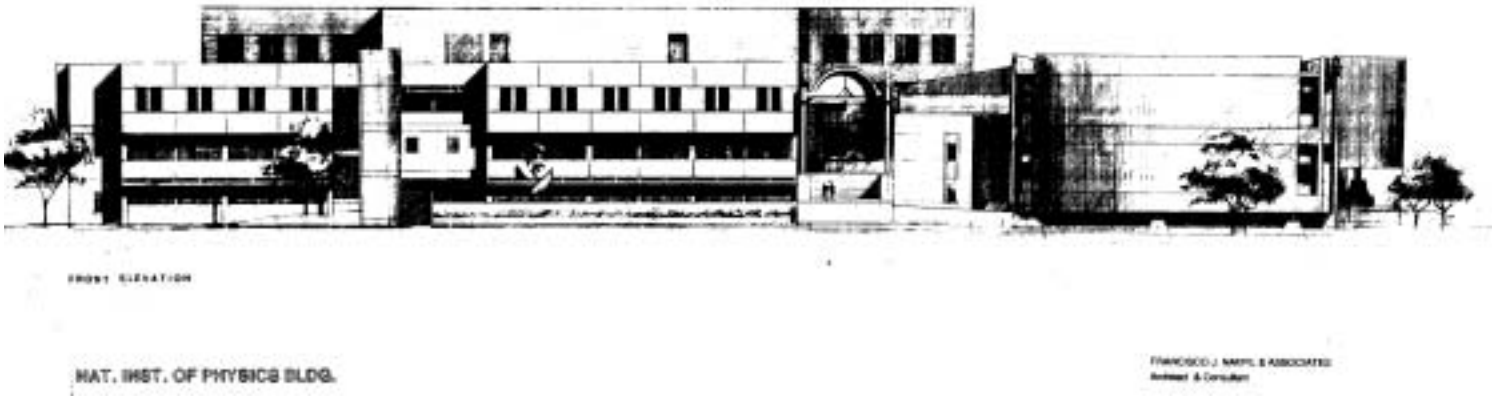
New NNIP Building Third Floor Plan.



New NNIP Building Fourth Floor Plan.



New NNIP Building Elevation Showing Main Entrance



APPENDIX H. COST ESTIMATES FOR THE NEW NIP BUILDING. The proposed phases are delineated in the succeeding page.

OFFICE OF THE CAMPUS ARCHITECT

Coral Building, Lakandula Street corner De los Reyes Street
University of the Philippines, Diliman, Quezon City 1101
Telephone # 9205301 to 99 or 9205382 locals 8032/ 8033 Telefax # 9278656

16 July 2002

Dr. CESAR SALOMA
Director
National Institute of Physics

Through: **Prof. LUIS MA. T. BOOT**
NIP Bldg. Coordinator

Subject: NIP Bldg. Estimates

Dear Dr. Saloma,

As promised (although quite delayed), we are giving you the Budgetary Estimates for the next phase/s for the completion of the NIP Bldg. This estimate is based on a per square meter cost derived from current market prices and based on the entire NIP Bldg. area as described in the Schematic Drawings submitted by Architect Francisco Nakpil.

Phase	Area (sq.m.)	Estimated Cost (PhP)
Phase 1 & 2	2,930.00	(Total) 41,000,000.00
Unbuilt Phases	13,914.00	(Based on 14T/sq.m.) 194,796,000.00
TOTAL	16,844.00	235,796,000.00

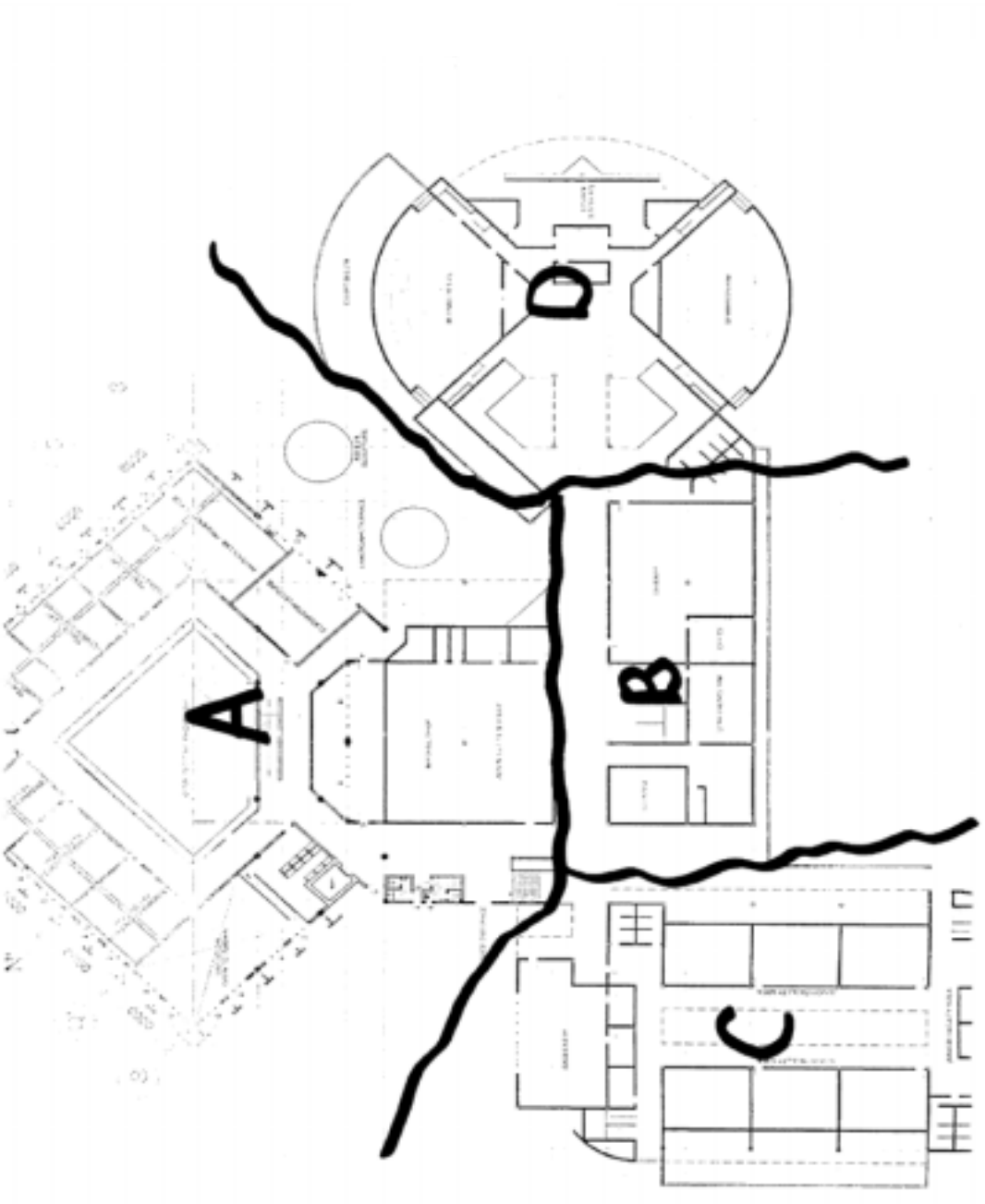
We understand the difficulty in sourcing such a large sum. We have therefore chosen to break down the NIP Bldg. into separate blocks and wings upon which the succeeding phases may be based on. These are the Laboratory & Administration Wing – the wing being constructed this year; the Faculty Offices Wing and the Lecture Hall Wing.

Portion	Built (sq.m.) Including CY 2002	Unbuilt (sq.m.)	Estimated Cost (PhP) for unbuilt portions @ 15T / sq.m.
Lab Wing	2,930.00	2,922.00	43,830,000.00
Admin Block	0	3,420.00	51,300,000.00
Lecture Hall Wing	0	3,072.00	46,080,000.00
Faculty Offices Wing	0	4,500.00	67,500,000.00
TOTAL	**2,930.00**	**13,914.00**	**208,710,000.00**
Site Development		12,000.00	(@ 2.5T / s.m.) 30,000,000.00

We hope this information helps in your efforts to secure additional funding for your Building. Please let us know how else we can help.

Very truly yours,

NICOLO DEL CASTILLO
Acting Director


A
B
C
D

APPENDIX I: ESTIMATE OF FURNITURE REQUIREMENTS (NNIP Phase 2)

I.	Students Desks (~400 @1700) Includes some desks which will be placed at old NIP	PhP	680,000
II.	In-House Construction		
	Blackboards (55 4'x 8'@700)		38,500
	Materials for 40 old type comp tables, 40 new type comp tables 10 senior type fac tables, 10 junior type fac tables, 50 stools, 30 whiteboards, conference tables		175,000
III.	Chairs		
	Faculty and Admin (20 @ 3000)		60,000
	Clerical (20 @ 2000)		40,000
	Computer Chairs (50 @ 3000)		150,000
	Visitor Chairs (10 @ 3000)		30,000
	Sofa		30,000
IV.	Steel Cabs(15 @ 5000)		75,000
	Filing Cabs(20 @ 5000)		100,000
	Steel Shelves (6@3000)		18,000
V.	Educational AVR		
	OHP (6 @ 7000)		42,000
	LCD		100,000
	Screens (12@ 3000)		36,000
	TV and DVD player		45,000
VI.	Aircons		
	10 5-ton split type @ 90,000		900,000
	14 3-ton split type @ 70,000		980,000
VII.	Trash Containers		40,000
	ESTIMATED GRAND TOTAL	**PhP**	**3,539,500**