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REVISED program

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PRESIDENT'S APPROVAL
APR 1 1987

NATIONAL INSTITUTE OF PHYSICS
COLLEGE OF SCIENCE, U.P. DILIMAN

REVISED PH.D. (PHYSICS) PROGRAM

1. OBJECTIVES OF THE PROGRAM

The Program leading to the degree of Doctor of Philosophy in Physics aims to provide students with an advanced graduate education in physics that will fully prepare them for scientific careers as top-level physicists in academic and/or research institutions. This program is specifically designed to enable students to (1) gain a deep and thorough knowledge of at least one specialized area of physics; (2) obtain a broad and comprehensive knowledge of several other major areas of contemporary physics; and (3) acquire the competence to undertake original and independent research in experimental and/or theoretical physics.

2. ADMINISTRATION OF THE PROGRAM

The Ph.D. (Physics) Program shall be administered by the Graduate Committee of the National Institute of Physics (NIP). This Committee shall be composed of all the NIP regular faculty members who possess a doctorate degree or its equivalent in pure or applied physics and shall be chaired by the NIP Director. The NIP Graduate Committee shall exercise the powers and responsibilities listed under the College of Science Guidelines for Graduate Programs.

3. ADMISSION INTO THE PROGRAM

3.1 Admission into the Ph.D. (Physics) program shall require (1) a B.S. or M.S. degree or their equivalents from a recognized institution of higher learning; (2) a strong and solid preparation in physics at the undergraduate level; and (3) a very high degree of intellectual capacity and aptitude for advanced study and research in physics.

These qualifications shall be determined by the NIP Graduate Committee on the basis of (a) the applicant's undergraduate and graduate scholastic records; (b) the written recommendations from three (3) of the applicant's former professors regarding his/her abilities; and (c) a personal interview with the applicant, if possible.

3.2 Each application for admission into the Ph.D. (Physics) Program must be accomplished in the official College of Science forms, submitted to and processed by the College Graduate Office, evaluated by the NIP Graduate Committee, and endorsed by the latter to the Dean of the College for official action.

3.3 If the applicant's bachelor's or master's degree is not in physics, he/she may be required first to make up for his/her undergraduate deficiencies in physics before he/she can be admitted into the Ph.D. (Physics) Program.

4. GENERAL REQUIREMENTS FOR THE PH.D. (PHYSICS) DEGREE

To qualify for the Ph.D. (Physics) degree, a student must satisfy the following requirements:

4.1 Complete of a program of study of at least forty-five (45) units of formal graduate courses in physics, in the case of students admitted into the Ph.D. (Physics) program with only a B.S. degree, or at least twenty-four (24) units of formal graduate courses in physics, in the case of students admitted into the Ph.D. (Physics) program with an M.S. degree;

4.2 Maintain a Cumulative Weighted Average Grade (CWAC) of 1.75 or better at the end of each academic year until completion of his/her program of study;

4.3 Pass the Preliminary Examination which is based on the core courses in his/her program of study.

4.4 Pass the Candidacy Examination after completion of at least two-thirds (2/3) of his/her program of study;

4.5 Complete at least two (2) units of graduate colloquium in physics, complete at least one (1) unit of a graduate seminar in physics, and present a yearly seminar report on the progress of his/her dissertation research;

4.6 Satisfactorily carry out three (3) units of undergraduate physics teaching in case he/she has had no previous physics teaching experience;

4.7 Submit a Doctoral Dissertation based on an independent and original research in experimental and/or theoretical physics;

4.8 Successfully defend the Doctoral Dissertation in a public Doctoral Examination;

4.9 Submit a scientific preprint based on the approved Doctoral Dissertation and accepted for publication in a reputable international scientific journal; and

4.10 Submit at least six (6) bound and certified copies of the approved Doctoral Dissertation.

5. THE PROGRAM COMMITTEE AND PROGRAM OF STUDY

5.1 The Program Committee

Each student admitted into the Ph.D. (Physics) Program shall be assigned a Program Committee composed of three (3) members to be designated by the NIP Graduate Committee from among its members. The Program Committee shall advise, monitor, and evaluate the student until he/she is advanced to Ph.D. candidacy and is assigned a Dissertation Committee.

5.2 Placement Examination

Students admitted into the Ph.D. (Physics) program with only a B.S. degree may be required by the NIP Graduate Committee to take a Placement Examination which will be scheduled about two (2) weeks before the start of the First Semester. This Examination, which shall be a written and/or oral examination based on topics covered in the upper-division courses of the NIP's B.S. (Physics) program, is intended to determine the level and extent of the student's undergraduate preparation in physics.

A student who does not perform satisfactorily in the Placement Examination may be required by his/her Program Committee to complete the appropriate remedial courses in the NIP's B.S. (Physics) program.

5.3 Program of Study

In consultation with the student and on the basis of his/her academic preparation and desired areas of specialization or interest, a Program of Study shall be drawn up by the Program Committee and submitted to the College Graduate Office through the NIP Graduate Committee within the first semester of the student's initial year in the Ph.D. (Physics) Program. Any subsequent revision in this Program of Study must be authorized by the Program Committee.

5.4 Semestral Study Load

The normal study load per semester shall be nine (9) to twelve (12) units of formal graduate courses.

6. COURSE REQUIREMENTS AND TRANSFER OF CREDITS

6.1 Course Requirements for B.S. Degree Holders

Students entering the Ph.D. (Physics) Program with only a B.S. degree shall be required to complete at least forty-five (45) units of formal graduate courses consisting of the following:

A. Core Courses: Eighteen (18) units consisting of Physics 221 (Classical Mechanics I), Physics 231-232 (Classical Electrodynamics I-II), Physics 241-242 (Quantum Mechanics I-II), and Physics 251 (Statistical Mechanics I);

B. Specialty Courses: Nine (9) units of graduate physics courses in the student's chosen area of specialization, consisting of six (6) units of basic, 200-level courses and three (3) units of an advanced 300-level course;

C. Breadth Electives: Twelve (12) units of graduate physics courses in two (2) or more major areas of physics which are not closely related to the student's chosen area of specialization;

D. Methods Elective: Three (3) units of any of the graduate courses in Mathematical Methods of Physics, Computational Methods of Physics, or Experimental Methods of Physics; and

E. General Elective: Three (3) units of any graduate course in physics or a closely related field.

The various electives in the above minimum course requirements must be chosen by the student with the advice and consent of his/her Program Committee or Dissertation Committee. Depending on his/her particular needs and interests, the student may also be advised by his/her Program Committee or Dissertation Committee to take additional graduate courses beyond the minimum 45-unit course requirements.

6.2 Course Requirements for M.S. Degree Holders

A student entering the Ph.D. (Physics) Program with a previously earned M.S. (Physics) degree from the NIP shall be required to complete at least twenty-four (24) units of formal graduate courses in physics beyond the abovementioned graduate core courses.

If a student, however, is admitted into the Ph.D. (Physics) Program with an M.S. degree obtained in another institution or in another discipline, he/she may be required by his/her Program Committee to complete from twenty-four (24) to forty-five (45) units of formal graduate courses in physics including part or all of the graduate core courses.

6.3 Transfer of Credits

Except in the case of a special academic agreement between the University and external academic institutions, only a maximum of nine (9) units of graduate physics courses earned in another institution may be credited to the Ph.D. (Physics) course requirements subject to the recommendation of the Program Committee and the approval of the NIP Graduate Committee.

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Ph.D. (Physics)

Under Grading System, include "1.25" in the listing of grades.

7. THE GRADE REQUIREMENT

7.1 Grading System

1.25;

The following numerical grades shall normally be used in graduate physics courses: "1.0" (Excellent); "1.5" (Very Good); "1.75"; "2.0" (Good; "2.25"; "2.5" (Satisfactory); "2.75"; "3.0" (Passed); "4.0" (Conditional Failure); "INC." (Incomplete); and "5.0" (Failed). In certain special courses, however, the following non-numerical grades may be given: "P" (Passed), "R" (Repeat), "S" (Satisfactory), or "U" (Unsatisfactory).

7.2 Cumulative Weighted Average Grade

To remain in good standing in the Ph.D. (Physics) Program, a student must maintain a Cumulative Weighted Average Grade (CWAG) of "1.75" or better in his/her course work until the completion of his/her program of study. The student's CWAG shall be computed at the end of each academic year by his/her Program Committee and reported by the NIP Graduate Committee to the College Graduate Office.

7.3 Failure to Satisfy the Grade Requirement

A student who fails to satisfy the above grade requirement at the end of the academic year shall be disqualified from the Ph.D. (Physics) Program unless the NIP Graduate Committee decides, on justifiable grounds and upon the recommendation of the student's Program Committee, to put him/her on probation for a period not exceeding two (2) semesters. Failure to obtain the minimum CWAG after the probation period shall automatically disqualify the student from the Ph.D. (Physics) Program.

8. THE PRELIMINARY EXAMINATION

8.1 Nature of the Preliminary Examination

The Preliminary Examination shall be a written examination which must be taken by a student in the Ph.D. (Physics) Program within one (1) year after the completion of the graduate core courses in his/her program of study. This examination, which will normally be scheduled during the summer session of each academic year, is intended to test the student's ability to integrate and apply the overall knowledge that he/she has gained from the graduate core courses.

The Preliminary Examination for the Ph.D. (Physics) degree is the same as the Preliminary Examination for the M.S. (Physics) degree, but the minimum passing grade in the former is higher than that in the latter. A student admitted into the Ph.D. (Physics) program with a previously earned M.S. degree shall also be required to take the Preliminary Examination unless he/she has previously obtained a doctoral passing grade in the NIP Preliminary Examination.

8.2 Administration of the Preliminary Examination

The Preliminary Examination shall be scheduled, administered, graded, and evaluated by the NIP Graduate Committee or a special examination subcommittee thereof. Copies and results of the Preliminary Examination must be submitted by the NIP Graduate Committee to the College Graduate Office within one (1) month after the last day of the examination.

8.3 Rating of the Preliminary Examination

A student's performance in the Preliminary Examination shall be rated either "Passed" or "Failed". If the student fails the Preliminary Examination, he/she shall be allowed to retake the examination within one (1) year after the first attempt. Failure of the student in the second attempt at the Preliminary Examination shall disqualify him/her from the Ph.D. (Physics) Program. Nevertheless, a student who fails the Preliminary Examination for the Ph.D. (Physics) degree can still qualify for the M.S. (Physics) degree if his/her performance in the said examination is rated by the NIP Graduate Committee to be passing by M.S. (Physics) standards.

9. THE CANDIDACY EXAMINATION

9.1 Nature of the Candidacy Examination

The Candidacy Examination is an oral examination that must be taken by the student within one (1) year after passing the Preliminary Examination and completing at least two-thirds (2/3) of his/her program of study. In this examination the student is required to present a seminar on an approved research topic in his/her chosen area of specialization and is examined on his/her (a) grasp of this chosen area of specialization, (b) mastery of the basic principles and methods of physics, and (c) readiness for dissertation research in his/her chosen area of specialization.

9.2 Administration of the Candidacy Examination

Upon the formal request of the student and the recommendation of his/her Program Committee, the NIP Graduate Committee shall designate a special examination panel of five (5) members which shall schedule, conduct, and evaluate the Candidacy Examination of the student. This oral examination shall last from two (2) to four (4) hours. Its result must be officially reported by the special examination panel to the College Graduate Office through the NIP Graduate Committee within the first working day after the examination.

9.3 Rating of the Candidacy Examination

The Candidacy Examination shall be rated either "Passed" or "Failed" by a simple majority vote of the special examination panel. If the student fails the Candidacy Examination, he/she will be allowed to take a second Candidacy Examination based on a different seminar topic within one (1) year after the first examination. Failure in the second Candidacy Examination shall disqualify the student from the Ph.D. (Physics) Program.

9.4 Advancement to Candidacy for the Ph.D. (Physics) Degree

If the student passes the Candidacy Examination, he/she is considered advanced to candidacy for the Ph.D. (Physics) Degree. In this case the student is also qualified for the M.S. (Physics) degree, provided he/she satisfies all the other requirements for the M.S. (Physics) degree under the non-thesis option.

10. THE DOCTORAL DISSERTATION

10.1 The Dissertation Committee

After the student is advanced to candidacy for the Ph.D. (Physics) degree, he/she will be assigned a Dissertation Committee composed of a Dissertation Adviser as Chairman and two (2) Dissertation Readers. One (1) of the Dissertation Readers should preferably belong to an external institution.

In special cases requiring joint advising, the Dissertation Committee may consist of a Dissertation Adviser, A Dissertation Co-Adviser, and a Dissertation Reader. If either the Adviser or Co-Adviser belongs to an external institution, the corresponding Co-Adviser or Adviser must be a regular faculty member of the NIP.

The members of the Dissertation Committee shall be formally appointed by the Dean upon the recommendation of the NIP Graduate Committee.

The Dissertation Committee shall be responsible for (1) advising the student in the preparation of his/her dissertation proposal, (2) guiding and monitoring his/her dissertation research, (3) submitting a yearly evaluation report on the progress of his/her dissertation research to the NIP Graduate Committee, and (4) endorsing his/her doctoral dissertation for defense in the Doctoral Examination.

10.2 The Dissertation Proposal

Before the student can formally start his/her dissertation research, he/she must first prepare a written dissertation proposal with the advice of his/her Dissertation Committee and submit it to the NIP Graduate Committee for approval. Upon approval of his/her dissertation proposal, the student may proceed to carry out his/her dissertation research under the guidance of his/her Dissertation Committee.

10.3 Standards for the Doctoral Dissertation

The doctoral dissertation for the Ph.D. (Physics) degree must (1) embody an original and independent research in physics by the student; (2) show the student's capacity to make a critical evaluation of previous work done in his/her chosen research topic; (3) demonstrate his/her ability to present scientific research findings in a clear, systematic, and scholarly manner; and (4) contain a significant experimental or theoretical contribution to physics.

11. COLLOQUIUM, SEMINAR, AND TEACHING REQUIREMENTS

11.1- The Graduate Colloquium in Physics

Prior to the Candidacy Examination, each student in the Ph.D. (Physics) Program must complete at least two (2) units of Physics 297 (Graduate Colloquium) by regularly attending the NIP colloquia for two (2) semesters. This requirement is intended to acquaint the student with current international advances in physics as well as ongoing research projects in the NIP.

11.2 The Graduate Seminar in Physics

Before the student can take the Candidacy Examination, he/she must also have completed at least one (1) unit of Physics 298 (Graduate Seminar) on top of the formal graduate course requirements in his/her program of study.

11.3 The College Graduate Research Colloquia

After the student is advanced to candidacy for the Ph.D. (Physics) degree, he/she must participate in the Graduate Research Colloquia of the College by giving a yearly seminar report on the progress of his/her dissertation research.

11.4 The Teaching Requirement

Every student in the Ph.D. (Physics) Program who has had no experience in physics teaching, must also satisfactorily complete three (3) units of undergraduate physics teaching in the NIP.

12. THE DEFENSE OF THE DOCTORAL DISSERTATION

12.1 The Doctoral Examination Panel

Upon completion of the doctoral dissertation and its endorsement by the Dissertation Committee to the NIP Graduate Committee, the latter shall recommend to the Dean the formal appointment of two (2) Dissertation Examiners.

The two (2) Dissertation Examiners together with the three (3) Dissertation Committee members shall constitute the Doctoral Examination Panel of five (5) members. At least one (1) of the members of the Doctoral Examination Panel should come from an external institution. The Doctoral Examination Panel shall be chaired by one of the Dissertation Readers or Dissertation Examiners to be designated by the Dissertation Adviser.

12.2 Administration of the Doctoral Examination

The Doctoral Examination, in which the student must defend his/her doctoral dissertation before the Doctoral Examination Panel, may be held within the College at any mutually convenient time upon the recommendation of the Doctoral Examination Panel, the endorsement of the NIP Graduate Committee, and the formal authorization of the Dean.

The Doctoral Examination may be held only if (a) the dissertation manuscript has been received by each member of the Doctoral Examination Panel at least one (1) month beforehand and (b) at least four (4) members of the Doctoral Examination Panel are present.

The schedule and place of the Doctoral Examination shall be officially authorized by the Dean and publicized throughout the College by the NIP Graduate Committee at least two (2) weeks beforehand. The schedule of the Doctoral Examination may be changed only upon the recommendation of the Doctoral Examination Panel, the endorsement of the NIP Graduate Committee, and the formal authorization of the Dean.

The Doctoral Examination shall be a public oral examination lasting no less than three (3) hours and no longer than five (5) hours. In accordance with the examination guidelines of the NIP Graduate Committee, questions may be asked by anybody during the examination, but the evaluation and rating of the student's dissertation defense shall be done by the Doctoral Examination Panel in a closed-door meeting to be held immediately after the Doctoral Examination.

12.3 Rating of the Doctoral Examination

The Doctoral Examination may be given either of the following ratings: "Passed", if the dissertation defense is deemed acceptable; "Provisionally Passed", if the dissertation defense is deemed acceptable subject to certain minor revisions of the dissertation in form or content; or "Failed", if the dissertation defense is deemed unacceptable.

Acceptance of the dissertation defense by at least four (4) members of the Doctoral Examination Panel shall merit the rating of "Passed", while rejection of the dissertation defense by at least two (2) Panel members shall incur the rating of "Failed". Any combination of conditional acceptance and/or rejection of the dissertation defense in between these two extremes shall result in a rating of "Provisionally Passed". Any vote of rejection by a Panel member must be explained in writing.

The result of the Doctoral Examination must be reported by the Doctoral Examination Panel to the College Graduate Office through the NIP Graduate Committee within the first working day after the examination.

12.4 Passing or Failing of the Doctoral Examination

If the student gets a rating of "Passed" in the Doctoral Examination, his/her doctoral dissertation is considered approved.

If the student gets a rating of a "Provisionally Passed" in the Doctoral Examination, he/she must comply with the conditions imposed by the Doctoral Examination Panel within six (6) months after the examination in order to change his/her rating to "Passed".

Compliance with the conditions must be certified by the Doctoral Examination Panel and reported to the Graduate Committee and the College Graduate Office before the doctoral dissertation can be officially endorsed for acceptance. Failure to comply with the conditions within the six-month period shall entail conversion of the rating of "Provisionally Passed" to a rating of "Failed".

If the student gets a rating of "Failed? in the Doctoral Examination, he/she may submit himself/herself to a second Doctoral Examination not earlier than six (6) months but not later than eighteen (18) months after the rating of "Failed" is obtained in the first examination. A rating of "Failed" in the second Doctoral Examination shall disqualify the student from the Ph.D. (Physics) Program.

13. THE SCIENTIFIC PUBLICATION REQUIREMENT

Before the student can qualify for graduation from the Ph.D. (Physics) Program, he/she must first submit to the NIP Graduate Committee and the College Graduate Office a preprint which is based partly or entirely on his/her approved dissertation and accepted for publication in a reputable, refereed international scientific journal.

14. RESIDENCE RULES

14.1 One-Year Residence Before Graduation

The student must be officially enrolled in the College for at least one (1) academic year prior to the conferment of the Ph.D. (Physics) degree.

14.2 Maximum Residence Rule

As a general rule, the time limit for the completion of all Ph.D. (Physics) degree requirements shall be no more than six (6) years for students who enter the Ph.D. (Physics) Program with an M.S. (Physics) degree or its equivalent and no more than eight (8) years for those who enter the Ph.D. program with a B.S. (Physics) degree or its equivalent. Residence shall start from the time the student enrolls in a graduate course in the Ph.D. (Physics) Program and shall include all leaves of absence from the program.

14.3 Extensions of Residence

In very special cases, extensions of residence beyond the above maximum residence period may be granted, for a period not exceeding one (1) calendar year, by the Chancellor upon the endorsement of the Dean and the recommendation of the NIP Graduate Committee.

14.4 Non-Compliance with the Maximum Residence Rule

A student who fails to complete all the requirements for the Ph.D. (Physics) degree within the maximum residence period and any approved extension thereof shall be disqualified from the Ph.D. (Physics) program.

14.5 Absence Without Leave

A student who goes on "absence without leave" (AWOL) from the Ph.D. (Physics) program shall be automatically dropped from the program.

15. GRADUATION FROM THE PH.D. (PHYSICS) PROGRAM

15.1 Application for Graduation

After the student passes the Doctoral Examination, he/she is qualified to apply for graduation at the College Graduate Office. The application must be recommended by his/her Dissertation Committee and endorsed by the NIP Graduate Committee.

15.2 Submission of the Bound Dissertation

The applicant for graduation must submit to the College Graduate Office six (6) bound copies of the approved doctoral dissertation as a prerequisite for graduation. The bound copies must contain the official certification of the Dissertation's approval by the members of the Dissertation Committee, its endorsement by the Director of the NIP, and its acceptance by the Dean.

15.3 Conferment of the Ph.D. (Physics) Degree

After the graduation of the student is recommended by the College, endorsed by the University Council, and approved by the Board of Regents, he/she shall be officially conferred the Ph.D. (Physics) degree.