

PUBLIC COMPETITIVE EXAMINATION FOR A FACULTY POSITION (PH.D.) - ONE-STAGE SELECTION PROCESS

Notice No. IF-124/2025

OPENING OF APPLICATIONS FOR A PUBLIC COMPETITIVE EXAMINATION OF KNOWLEDGE, HABILITIES AND ACADEMIC RECORDS FOR THE APPOINTMENT OF ONE (01) FACULTY POSITION (PH.D.) AT THE DEPARTMENT OF NUCLEAR PHYSICS, INSTITUTE OF PHYSICS, UNIVERSITY OF SÃO PAULO

The Director of the Institute of Physics of the University of São Paulo hereby makes public that, according to the decision of the Congregation at its ordinary session held on November 27, 2025, applications will be accepted for a period of ninety (90) days, starting at 12:01 a.m. (Brasília time) on January 14, 2026, and ending at 11:59 p.m. (Brasília time) on April 13, 2026, for a public competitive examination of **knowledge, habilities and** academic records for the appointment of one (1) Assistant Professor position (reference MS-3), under the Full-Time Dedication service to Teaching and Research regime (RDIDP), position number 1265571, with a monthly salary of R\$ 16,353.01 (sixteen thousand three hundred fifty-three Brazilian reais and one cent) (May/2025), at the Department of Nuclear Physics, in the field of **Development of Computational Models for Applications in Medical Imaging**, according to Article 125 of the General Regulations of the University of São Paulo, and according to the program listed below.

Syllabus:

- Electrical potentials and signal transmission in nervous system:
- Nuclear decay and types of radiation
- Interaction of X-rays and gamma rays with matter
- Interaction of fast charged particles with matter
- Biological effects of ionizing radiation
- Radiation detectors
- Quantities in radiation protection
- Principles of radiological image formation
- Laws of Thermodynamics
- Electric and magnetic fields in matter

The selection process shall be governed by constitutional principles, particularly that of impersonality, as well as by the provisions of the Statutes and General Regulations of the University of São Paulo and the Regulations of the Institute of Physics.

1. Applications

Applications must be submitted **exclusively online** through <https://uspdigital.usp.br/gr/admissao> within the period indicated above. Applicants must complete the required personal information and upload the following documents:

I – A detailed academic memorial (in Portuguese or English), including supporting documentation of publications, relevant activities, and information allowing assessment of academic merit, in digital format;

II – Proof of possession of a Doctoral degree awarded by USP, recognized by USP, or valid nationwide in Brazil;

III – Proof of compliance with military service obligations (for male Brazilian applicants);

IV – Electoral clearance certificate or detailed certificate issued by the Brazilian Electoral Court within 30 days prior to the start of the application period; (for Brazilian applicants)

V – Official identification document;

VI – Research project, in Portuguese or English, authored by the applicant, in digital format.

§1 – The detailed academic memorial referred to in item I shall consist of a reflective analysis of academic training, personal study experiences, professional activities, research, publications, and other relevant academic and professional information, indicating motivations and significance.

§2 – Supporting materials that cannot be digitized (such as models, artworks, or other materials) must be presented no later than the last business day prior to the start of the examination.

§3 – Links to Dropbox, Google Drive, or any other externally editable pages will not be accepted as supporting documentation.

§4 – For the purposes of item II, minutes of thesis defense without proof of formal degree approval will not be accepted when degree conferral depends on such approval; failure to provide proof will result in rejection of the application.

§5 – Faculty members currently employed by USP are exempt from requirements in items III and IV, provided compliance was demonstrated at the time of initial appointment.

§6 – Foreign applicants are exempt from requirements in items III and IV but must demonstrate lawful status in Brazil at the time of the examinations.

§7 – A foreign applicant approved and nominated for the position may only take office upon presentation of a temporary or permanent visa authorizing remunerated activity in Brazil.

§8 – At the time of application, applicants with or without disabilities may request specific accommodations for the examinations, attaching a medical report issued within the last two (2) years, written in Portuguese or accompanied by a sworn translation, clearly indicating the required accommodations.

§9 – Applicants are fully responsible for uploading documents in the correct fields of the online system; submission in incorrect fields may result in rejection of the application.

§10 – Applicants are responsible for submitting complete and legible documents (front and back). Failure to correct incomplete or illegible uploads within the application period will result in rejection.

§11 – Late submission of documents will not be accepted, even at the appeal stage.

§12 – At the time of application, applicants who self-declare as Black, Brown (mixed race), or Indigenous may indicate interest in participating in the differentiated scoring system.

§13 – Eligibility for differentiated scoring for self-declared Black or Brown applicants requires phenotypic characteristics consistent with such classification.

§14 – Self-declaration is subject to confirmation by a hetero-identification committee.

§15 – If self-declaration is not confirmed, the applicant will be eliminated from the examination, and any appointment may be annulled following due administrative process.

§16 – Indigenous applicants must submit the Indigenous Birth Registration (RANI) or that of one parent.

§17 – Exceptional cases may be evaluated by the Council for Inclusion and Belonging, which may accept confirmation through a memorial and declarations of ethnic belonging signed by recognized Indigenous leaders.

§18 – Current regulations on documentation and confirmation procedures are available on the USP General Secretariat website.

§19 – For item III, documents listed in Article 209 of Federal Decree No. 57,654/1966 will be accepted; male applicants aged 45 or older by December 31 preceding the application period are exempt.

§20 – Applicants must agree to the terms of this Notice and consent to the processing of personal data in accordance with Law No. 13,709/2018 (Brazilian General Data Protection Law).

§21 – Only applications submitted in full compliance with this Notice will be considered.

§22 – Applicants may indicate their intention to take the examinations in English. The content will be identical in Portuguese and English.

2. Review of Applications

Applications will be formally reviewed by the Congregation of the Institute of Physics within up to ninety (90) days after the application period ends, with decisions published in the Official Gazette of the State of São Paulo.

§1 – The examination shall take place between thirty (30) and one hundred twenty (120) days after publication of the approved applications.

§2 – Examination convocations will be published at least five (5) business days in advance.

3. Examination Components

The examination shall consist of:

- I – Evaluation of the academic memorial, with a public oral examination – **weight 4**;
- II – Teaching examination, with a corresponding oral examination – **weight 3**;
- III – Presentation of the research project, with a corresponding oral examination – **weight 3**.

§1 – The convocation of applicants for the examinations shall be published in the Official Gazette of the State of São Paulo.

§2 – The applicant shall be eliminated from the present selection process, without prejudice to any applicable legal sanctions, if, at any time, he or she:

- a) arrives after the scheduled starting time of the examination proceedings or any of its components, including the drawing of topics, if applicable;
- b) fails to appear when his or her presence is required at any stage of the examination or leaves the examinations without authorization from the Examining Committee;
- c) introduces, in examination materials that require anonymity, any sign, mark, initials, annotation, or signature that allows identification of authorship;
- d) engages in inappropriate behavior or disrupts the orderly conduct of the examinations or any other stages of the selection process, through verbal manifestations or conduct incompatible with the integrity and decorum of the proceedings;
- e) carries a firearm at the examination site, even if legally authorized to do so, except in exceptional cases provided for by law and expressly authorized by the Examining Committee.

§3 – In evaluating the examinations, the Examining Committee shall take into account the purpose stated for the creation of the position (faculty position authorization) to which this selection process is directed, as described in the annex to this Notice.

4. Evaluation of the Academic Memorial

The evaluation of the academic memorial, expressed by a single overall score, including the oral examination and assessment, shall reflect the applicant's academic merit.

§1 – In evaluating the academic memorial, the committee shall consider:

- I – Scientific, literary, philosophical, or artistic production;
- II – University-level teaching activities;
- III – Activities related to service to the community;
- IV – Professional or other relevant activities, where applicable;
- V – Academic degrees and other academic distinctions.

§2 – After the oral examination of all applicants, the Examining Committee shall meet in a closed session, at which time each examiner shall prepare a detailed written report on each applicant's performance and assign the corresponding scores.

5. Teaching Examination

The teaching examination shall be public, with a minimum duration of forty (40) minutes and a maximum duration of sixty (60) minutes, and shall address topics from the syllabus of the field of knowledge established in this Notice.

- I – the applicant shall choose the topic based on the examination syllabus;
- II – the applicant may use any teaching materials deemed necessary;
- III – upon reaching the sixtieth (60th) minute of the examination, the Examination Committee shall interrupt the applicant;
- IV – if the presentation ends before the fortieth (40th) minute, the applicant shall receive a grade of zero in this examination;
- V – at the end of the presentation, members of the Examination Committee may request clarifications from the applicant, and the total time for questions and answers shall not exceed six (6) minutes per examiner or thirty (30) minutes in total;
- VI – grades for the teaching examination shall be assigned after completion of all applicants' examinations.

§1. The relevance of the chosen topic to the examination syllabus shall be considered by the Examination Committee when assigning the grade.

6. Research Project Presentation

The presentation of the research project shall be conducted in the form of a dialogue and shall not exceed sixty (60) minutes for the examining committee as a whole and sixty (60) minutes for the applicant.

§1 – In evaluating the research project, consideration shall be given to its alignment with the field of knowledge specified in this Notice, its relevance and originality, and its feasibility in light of the existing infrastructure of the academic unit.

7. Final Scores and Differentiated Scoring

Upon completion of the evaluation of the examinations, each applicant shall receive, from each examiner, a final score corresponding to the weighted average of the scores assigned, in accordance with the weights established in item 3 and the possible application of differentiated scoring, as set forth below.

§1 – The formula for calculating the differentiated score to be assigned to self-declared Black, Brown (mixed race), and Indigenous applicants is:

$$PD = (MCA - MCPPI) / MCPPI$$

Where:

- **PD** is the differentiated score, calculated per examiner, to be added to the scores of all Black, Brown, or Indigenous applicants who expressed interest in participating in the differentiated scoring system;

- **MCA** is the average score of the general competition among all applicants who received scores, excluding those disqualified for failing to obtain, from a majority of examiners, the minimum final score of seven (7). “General competition” refers to applicants who did not self-declare as Black, Brown, or Indigenous, as well as those who did self-declare but opted not to participate in the differentiated scoring system;
- **MCPPI** is the average score of the Black, Brown, and Indigenous competition among all applicants who received scores, excluding those disqualified.

§2 – The formula for applying the differentiated score to the final scores of Black, Brown, and Indigenous applicants is:

$$\text{NFCPPI} = (1 + \text{PD}) \times \text{NSCPPI}$$

Where:

- **NFCPPI** is the final score of the public selection process after application of the differentiated score, which determines the applicant’s classification in this stage, limited to the maximum score established in the Notice. Upon completion of the selection process, the final score shall thereafter be considered the applicant’s simple score;
- **NSCPPI** is the applicant’s simple score, to which the differentiated score is applied.

§3 – Calculations referred to in §§1 and 2 shall consider two decimal places, and fractions greater than or equal to 0.5 shall be rounded up to the next integer.

§4 – The differentiated score shall apply to all qualified beneficiaries who have achieved the minimum performance required by the Notice, considering, for this purpose, the simple score.

§5 – If there are no qualified beneficiaries of differentiated scoring, no differentiated score shall be calculated.

§6 – Differentiated scoring shall not be applied when, in the calculation formula, MCPPI is greater than MCA.

8. Scores

Examination scores shall range from zero (0) to ten (10), rounded to one decimal place.

9. Announcement of Results

The result of the selection process shall be announced by the Examining Committee immediately after its conclusion, in a public session.

10. Qualification Threshold

Applicants who obtain a final score of at least seven (7) from a majority of examiners shall be considered qualified.

11. Nomination by Examiners

Each examiner shall nominate applicants according to the highest scores assigned. In the event of a tie, the examiner shall break the tie with a reasoned decision.

12. Appointment Recommendation

The applicant who receives the highest number of nominations from the Examining Committee shall be recommended for appointment.

§1 – In the event of a tie in nominations, the Examining Committee shall decide based on the highest overall average score, and if the tie persists, shall break it with a reasoned decision.

13. Approval by the Congregation

The report of the Examining Committee shall be reviewed by the Congregation for purposes of approval, following formal examination, within a maximum period of ninety (90) days.

§1– The decision of the Congregation and the report of the Examining Committee shall be published within five (5) business days.

14. Appeals

Appeals may be filed within ten (10) days from the date of publication of the relevant act in the Official Gazette of the State of São Paulo, under penalty of forfeiture, in the following cases:

- I – decision of the Congregation appointing the Examining Committee;
- II – review of applications by the Congregation with respect to formal requirements;
- III – approval of the final report of the Examining Committee by the Congregation.

§1 – The evaluation of academic merit is the exclusive and non-delegable responsibility of the Examining Committee and shall not be subject to re-examination on appeal, which shall be limited to verification of the legality and regularity of the evaluation process.

§2 – Appeals based on item I shall proceed to higher instances only after approval by the Congregation of the final report of the selection process.

§3 – In appeals based on item III, the nominated applicant shall be guaranteed the right to submit counterarguments within ten (10) days from formal notification.

15. Medical Examination

The appointment of the nominated applicant shall be subject to approval in a medical examination conducted by the State Department of Medical Examinations (DPME), pursuant to Article 47, VI, of Law No. 10,261/1968.

16. Governing Resolution

The appointment of the approved faculty member and all related procedures shall be governed by Resolution No. 7,271 of 2016.

17. Exclusive Employment Regime

Faculty members appointed under the RDIDP regime shall maintain exclusive employment with the University of São Paulo, pursuant to Article 197 of the General Regulations of USP.

18. Validity of the Selection Process

The selection process shall have immediate validity, and only the applicant nominated for the position offered shall be recommended for appointment.

19. Appointment Convocation

The applicant shall be summoned for appointment through publication in the Official Gazette of the State of São Paulo.

20. Further Information

Further information regarding this Notice may be obtained from the Academic Division of the Institute of Physics of the University of São Paulo by email at ataac@if.usp.br or through the website https://portal.if.usp.br/ataac/pt-br/concursos_abertos.

São Paulo, December 10, 2025

Prof. Dr. Kaline Rabelo Coutinho
Director

ANNEX – JUSTIFICATION FOR THE AUTHORIZATION OF A FACULTY POSITION

RESEARCH AREA: Development of Computational Models for Applications in Medical Imaging

1. Current Situation of the Department/Area (Contextualization)

The Department of Nuclear Physics (DFNC) conducts research along three main lines: Theoretical Nuclear Physics, Experimental Nuclear Physics, and Applied Physics. Within the latter, the DFNC hosts the Radiation Dosimetry and Medical Physics Group, which is highly active in the fields of radiation protection and medical physics. This new faculty hire will strengthen and expand this research area within the Department.

From the undergraduate education perspective, the DFNC has supported the implementation of the Medical Physics undergraduate program, recognizing the relevance of this field in terms of

research, training of new professionals, and extension of this knowledge to society. The choice of the proposed research area for the new faculty member arises from this broader perspective of the DFNC. This research line is expected to be highly attractive for the incorporation of new research projects funded by national and international agencies, as well as to serve as a hub for graduate student training and postdoctoral supervision.

The variety and complexity of systems currently used for medical imaging have been advancing rapidly worldwide. However, this increasing complexity and diversity imposes a significant and growing challenge for both scientific investigations and clinical applications: traditional methods for defining and selecting technologies that optimally balance clinical outcomes and patient safety (particularly low doses, especially in the case of X-ray use) are based on imaging clinical trials. Such experiments are often not feasible due to ethical constraints, costs, time requirements, or the lack of a reference standard.

As a result, in the field of Medical Physics there has been significant progress in the development of computational anthropomorphic models capable of addressing the need to evaluate both new technologies and new procedures, as well as dose-reduction techniques using commonly employed imaging methods. The development of these computational models, which realistically simulate images of the human body as if they had been obtained by a real imaging system, has been strongly driven by the need to assign quantitative and qualitative information to diagnostic imaging modalities.

It should be emphasized that the development of computational anthropomorphic models spans different imaging modalities and can branch into important innovative development strategies, such as computational observer models for image analysis and interpretation, development of physical phantoms, improvement of dosimetric techniques for organ dose assessment, synthesis of new dosimetric materials and tissue-equivalent materials, among others. All these methods are transversal and complementary to ongoing research projects at the DFNC, enabling immediate cooperation between the new faculty member and current researchers in the Medical Physics research area.

2. General Objective of the Faculty Hiring

To contribute to the renewal of the faculty at IFUSP and DFNC, providing a significant update in a traditional, interdisciplinary, and multidisciplinary research area with strong impact on Brazilian society. In addition, the faculty member is expected to conduct cutting-edge research with strong interaction with universities and research centers worldwide, as well as short-term innovation potential.

It is also expected that the faculty member will play a prominent role in teaching, delivering both basic undergraduate courses and specialized undergraduate and graduate courses. Given the knowledge area of the position, outreach activities are particularly relevant and may enhance institutional extension projects.

Individualized Plan

a) Teaching – Goals

i. Undergraduate Education

Like all IF faculty members, the new hire will contribute to Physics teaching in various USP programs, in accordance with the assignments defined by the IF Undergraduate Committee. The recently established evening Bachelor's Degree in Medical Physics at IFUSP requires the creation of specific elective courses, such as *Analytical Methods for Medical Image Quality Assessment*, *Applications of Artificial Intelligence in Therapeutic and Diagnostic Techniques*, among others, which may be offered in partnership with the School of Medicine (FM) and faculty members from the medical field. The contribution of a new faculty member to the recently established Medical Physics undergraduate program is immediate and reinforces IF's leadership role in this area.

ii. Graduate Education

In addition to the aspects mentioned above, the new faculty member is expected to supervise graduate students and attract postdoctoral researchers who will strengthen investigations at the frontiers of the research area proposed in this document and related fields. Offering a graduate-level course in medical imaging simulation would also be a valuable contribution by the new hire.

b) Research and Innovation – Goals

Given the relevance, timeliness, and potential of the proposed research area for the new faculty member at the DFN, it is expected that new research projects funded by national and international agencies will be attracted and incorporated, with a focus on graduate student training and postdoctoral supervision, as is expected for new IFUSP faculty members.

The faculty member will find at the DFN an environment already supported by partnerships with local, national, and international institutions and research groups whose activities interface with the proposed research line, facilitating the initiation of research activities. Some of these institutions include:

- Institute of Radiology of the Hospital das Clínicas, School of Medicine, University of São Paulo
- Innovation centers such as InovaLab, InovaHC, InovaUSP, and CTI Renato Archer
- AXTI Group, Radboud University Medical Center
- International Atomic Energy Agency (IAEA)
- National Cancer Institute (NCI)

In addition, other research groups may be mentioned, such as Duke University, the University of Pennsylvania, the University of Varna, Lund University, and the U.S. Food and Drug Administration (FDA), among others, with which informal contacts already exist. As a result, an increase in scientific publications in high-impact-factor journals is expected.

c) Culture and Outreach

The new faculty member is expected to participate in extension activities developed at IFUSP. The DFNC is already active in university outreach initiatives related to the field of this position, listed below, which may be embraced or expanded by the new faculty member to address societal challenges:

- Radiation Dosimetry Service, responsible for individual monitoring of occupationally exposed individuals from various USP units;
- Quality Control Program in Diagnostic Imaging implemented at the Institute of Radiology of the Hospital das Clínicas, School of Medicine, USP;
- Medical Physics Residency Program – Diagnostic Imaging Modality, School of Medicine, USP, training two residents per year with scholarships provided by the Brazilian Ministry of Health.

The hired faculty member will benefit from a highly supportive environment to develop outreach activities, particularly in science communication and support for physics education. In addition, partnerships with companies for product and project development are also encouraged, with existing cooperation agreements already in place, offering further pathways for direct engagement with societal demands.

It is therefore expected that the faculty member will act directly in returning innovations to society, contribute to science dissemination and public education, and help train qualified professionals capable of addressing societal challenges.

3. Expected Impact of the Hiring

As outlined above, the new faculty member is expected to lead actions in research, teaching, and culture and outreach that will generate positive impacts for IFUSP and USP. Some anticipated outcomes include:

a) Research

- Attracting graduate students and postdoctoral researchers to develop innovative projects;
- Fostering new national and international collaborations;
- Coordinating research projects that expand IFUSP's cooperative network with partners in Brazil and abroad;
- Increasing the number of publications in high-impact scientific journals.

b) Teaching

Contributing to the Interunit Medical Physics Program (IF-FM) by teaching specialized courses and proposing new courses integrated into the curriculum, keeping it current, attractive, and challenging for new students. Similarly, proposing graduate-level courses in the area to support human resource training.

c) Culture and Outreach

- Acting as a faculty member and collaborator in the Medical Physics Residency Program at the School of Medicine, coordinated in partnership with IFUSP;
- Proposing and delivering university extension courses;
- Cooperating in the development of new analytical methodologies to be implemented in the Diagnostic Imaging Quality Control Program at the Institute of Radiology of the Hospital das Clínicas, School of Medicine, USP.

Thus, it is expected that hiring this new faculty member will positively impact the three pillars of the University—teaching, research and innovation, and culture and university outreach—through increased productivity and engagement.

In the medium term, the faculty member is expected to propose graduate courses aligned with their research projects, enriching the Institute's academic curriculum. In addition, the faculty member should supervise Master's students, making significant contributions to the graduate program, and seek to expand scientific collaborations both within IFUSP and with external groups, including international partnerships. Participation in administrative activities is also expected, including service on collegial bodies, committees, and the Congregation.

In the long term, the faculty member is expected to play a key role in the training of highly qualified human resources, teaching and coordinating teams in courses, supervising PhD students, and mentoring postdoctoral researchers. In the area of Culture and Outreach, active participation in established IFUSP activities is expected, as well as engagement in independent initiatives such as public lectures, popular science publications, and other outreach activities. Increased involvement in administrative roles is also expected, including course coordination and vice-coordination, chairing and vice-chairing committees, and serving as department chair or vice-chair, among other responsibilities.