

**TENURE-TRACK FACULTY POSITION IN PHYSICS
INSTITUTE OF PHYSICS, UNIVERSITY OF SÃO PAULO, BRAZIL**

Announcement IF-33,2025

Announcement of an open tenure-track faculty position at the Institute of Physics, University of São Paulo, Brazil, Level MS-3, RDIDP (Full-time dedication to teaching and research) at the Experimental Physics Department at the Institute of Physics, University of São Paulo.

The Director of the Institute of Physics at the University of São Paulo, Professor Kaline Rabelo Coutinho, invites applications for a full-time tenure-track faculty position in the field of “Experimental Physics in the field of soft matter, with emphasis in optics, x-ray and neutron diffraction and scattering” to be appointed in 2025. Eligible candidates should have a Ph.D. and postdoctoral research experience. Applicants should possess an outstanding potential to establish an independent research program and a commitment to teach undergraduate and graduate courses in Portuguese, 2 years after appointment. This position comprises full-time dedication to research and teaching, level MS-3, RDIDP. Salary is **R\$15.498,97**, non-negotiable. The position nº **1018442** at the Experimental Physics Department is open for applicants for 90 days, from **April 3th, 2025, at 12:01 a.m. to July 1st, 2025, at 11:59 p.m. (GMT 3, Brasília time)**. The following is the detailed description of the program for the examinations:

Electromagnetism I (4302303): 1. Maxwell's equations in vacuum. 2. Electromagnetic potentials. Electrostatics in vacuum. Poisson and Laplace equations. Magnetostatics in vacuum. 3. Dielectric and magnetic materials. Maxwell's equations in a material medium. Constitutive relations. Electromagnetic induction 4. Electrostatic and magnetostatic energy. 5. Electromagnetic waves. Poynting vector. Wave superposition. Wave packets, uncertainty relations, and group velocity. Reflection and refraction of electromagnetic waves. Wave equations with sources. Radiation from oscillating dipoles.

Electromagnetism II (4302304): 1. Propagation of electromagnetic waves in conducting and insulating media. Reflection and refraction. Dispersion in material media. 2. Propagation between two parallel mirrors. Waveguides and resonant cavities. 3. Spherical electromagnetic waves. Light scattering. 4. Retarded potentials. Liénard-Wiechert potentials. Radiation from a moving charge. Radiation from oscillating dipoles. Antennas. 5. Covariant formulation of Maxwell's equations.

Applications

1. Applications must be submitted exclusively via the link <https://uspdigital.usp.br/gr/admissao> during the period stated above, informing his/her personal data and the Department for which he/she is applying, accompanied by the following documents:

- I - Detailed Curriculum Vitae (.pdf), outlining his/her experience in the specific area of the opening, list of published papers, activities related to the field of application, a two years research project and any complementary information which enables assessing the merits of the applicant;
 - II - Proof of a PhD degree with national validity, or accredited by the Institute of Physics of the University of São Paulo;
 - III – For Brazilian male applicants, proof of discharge from military service;
 - IV - For Brazilian applicants, electoral discharge certificate or detailed certificate issued by the Electoral court less than 30 days before the start of the application period.
 - 1.1. An applicant already appointed at USP is exempted from the requirements III and IV, if these requirements were met during his/her appointment.
 - 1.2. Foreign applicants are exempted from the requirements III and IV, instead, he/she must submit a copy of the identity pages in the passport.
 - 1.3. An appointed foreign applicant may only take office if holding a temporary or permanent visa, which grants to the holder permission to exercise remunerated activities in Brazil.
 - 1.4. Upon registration, foreign applicants may submit a written request to take the application exams in English. The contents of the examinations conducted in English or in Portuguese will be identical.
 - 1.5. Upon registration, applicants with disabilities or special needs must submit a request for the necessary conditions being provided during the examinations.
2. The General Committee of the Institute of Physics will judge and announce the formal acceptance of the applications.
 - 2.1. The examination of the candidates will take place within 30 and 120 days, after the formal acceptance of the applications.
 3. The examination of the candidates will consist of the following exams.
 - I) Analysis and public examination of the Curriculum Vitae – weight 4 .
 - II) Teaching exam (public lecture on a subject within the topics described above) – weight 3.
 - III) Public examination of the research project - weight 3.
 - 3.1. The list of eligible applicants will be published in the São Paulo State Official Gazette.
 - 3.2. Candidates who arrive late to the exams will be ineligible to proceed.

PUBLIC EXAMINATION OF THE CURRICULUM VITAE

4. The evaluation of the Curriculum Vitae includes a public examination graded by each member of the Committee.

Sole paragraph - The grading of the Curriculum Vitae must consider: I – the scientific, literary, philosophical, or artistic production; II - university teaching activities; III - services to the community; IV - professional or other activities, if applicable; V - degrees and university honors.

TEACHING EXAM

5. The public Teaching Exam consists of a 40 to 60-min lecture on a topic drawn from a list of topics. The lecture will begin 24 hours after the drawing.

I – The Examining Committee will prepare and announce a list of ten topics within the program detailed above;

II – Immediately after becoming aware of the examination topics, candidates may ask to replace one or more topics they understand not belonging to the program. The Examining Committee will decide the claim and if necessary, substitute the topics under objection.

III – After drawing the topic, a 24-h period to prepare the lecture will start. The lecture will begin the next day, at the same time of the drawing. The candidate may not waive this deadline.

IV - Candidates may use and consult all materials he/she deems necessary.

PUBLIC EXAMINATION OF THE RESEARCH PROJECT

6. The examination of the Research Project will be in the form of a dialogue: A short oral presentation of the project to the Committee (if asked for), up to sixty minutes questioning by the Committee and the same time, sixty minutes, for the answers of the candidate.

I - The Research Project, should consider its actual feasibility at the existing infrastructure of the Institute and must be framed within the field of the announcement.

GRADING

7. After the exams, members of the Examination Committee will individually grade each candidate.
8. The grades may range from zero to ten, with one decimal place.
9. Each candidate will have a final grade given by each member of the Examination Committee. The final grade is calculated as a weighted average (according to the weights given in item 3) of the grades of each exam.

§ 1º - Differentiated score formula to be applied for candidates of Black, Mixed-race, and Indigenous ethnicities (PPI candidates):

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

Where:

- PD is the differentiated score to be added to the grades of all candidates who expressed interest in participating in the differentiated score.
- MCA is the average score of the broad competition among all candidates, excluding those who did not reach the minimum score referred to in item 10 of this Edict and PPI candidates participating in the differentiated score.
- MCPPI is the average score among all PPI candidates, excluding those who did not reach the minimum score referred to in item 10 of this Edict.

§ 2º - The formula to account for the differentiated score in the final grades of PPI candidates is:

$$NFCPPI = (1 + PD) * NSCPPI$$

Where:

- NFCPPI is the final grade of the public examination, after applying the differentiated score. It will generate the candidate's classification in the public examination stage, limited to the maximum grade stipulated in the Edict. At the end of the public examination, the final grade will be considered the candidate's simple grade.
 - NSCPPI is the simple score of the PPI candidate, on which the differentiated score will be applied.
- § 3º - The calculations referred to in §1 and §2 of this item must consider two decimal places and fractions greater than or equal to 0.5 (five-tenths) must be rounded to the next whole number.
- § 4º - The differentiated score (PD) provided for in this article applies to all qualified candidates, that is, those who have achieved the minimum performance established in the Edict, considering for this last purpose the simple score.
- § 5º - If there are no PPI candidates with differentiated score among those qualified, the differentiated score will not be calculated.
- § 6º - The differentiated score will not be applied when, in the differentiated score (PD) calculation formula, the MCPPI (average PPI competition score) is greater than the MCA (average broad competition score).
10. To be eligible, candidates must achieve a minimum final grade of seven from the majority of examiners. Each examiner will nominate the candidate he/she graded highest.
 11. The candidate receiving most nominations by the Examination Committee will be indicated for appointment.
 12. The Examination Committee will publicly announce the results of the examination immediately after its completion.
 13. The effective appointment to the position depends on a medical examination conducted by the State's Department of Medical Skills (DPME), pursuant to article 47, VI, of Law No. 10.261/68.
 14. Further information and relevant rules for the examination are available at the Academic Assistance Department of the Institute of Physics, University of São Paulo, and e-mail ataac@if.usp.br.

Legal provisions: Announcement IF-33, 2025, approved during the 614th Ordinary Session of the Institute of Physics Committee, held on 02/27/2025. Information 8584/24, Deliberation GR/Circ/109, art. 125, paragraph 1, of USP's General Regulations and by the Rules of the Institute of Physics: Resolutions No. 4,087 of June 21, 1994, 4,265 of May 3, 1996, 5,367 of October 18, 2006 and 5,829 of April 4, 2010. Authorization for taking exams in English: paragraph 8 of art. 135 of the General Rules. The joining to the faculty in the Full-Time Regime (RDIDP) is conditional upon the approval of the Special Work Regime Committee (CERT), in accordance with Resolution 7271/16 and other applicable rules, and implies in exclusive relationship with USP, under ARTICLE 197 of the General Rules.

São Paulo, March 31th, 2025.

Proposal for Opening a Position in the Experimental Physics Department, following the approval of the notice at the Congregation on February 27, 2025, for the Complex Fluids area

1) Current Situation of the Department/area (contextualization)

The hiring of a professor in the experimental area of Complex Fluids Physics, with an emphasis on linear and nonlinear optics and X-ray and neutron scattering and diffraction, at the Experimental Physics Department of the Physics Institute of USP (IFUSP), follows the dynamics of the Department, which is intensely involved in research and innovation, teaching and extension activities, largely demonstrated by the activity of the Complex Fluids Group (GFCx). The person to be hired will rejoin our staff, becoming involved with the university's core activities from the very beginning, receiving the necessary support to expand their activity in accordance with their personal development.

About our profile at GFCx, we are 3 professors, working in areas of Soft Matter Physics, especially, magnetic colloid liquid crystals, biological fluids (LDL and HDL), protein in solution and hair fibers. The three professors are involved in all core activities of the University. One of them will retire due to compulsory retirement in three years.

In 2024/2025, these three professors were involved in projects funded by FAPESP, CNPq and CAPES, and in the National Institute of Science and Technology of Complex Fluids, with IFUSP being the headquarters of this INCT.

2) General Objective of Recruiting the Professor

Continue with the permanent renewal of IFUSP by updating areas of activity, seeking independent researchers, with a leadership profile and internationally competitive. Play an important role in maintaining/expanding the impact of IFUSP's research. However, the person must be able to interact with existing research groups in the Department/Unit/University, where there is a favorable environment for integration into interdisciplinary and multidisciplinary efforts.

Play an essential role in teaching, teaching fundamental subjects for undergraduate and graduate education, and in university extension through the development of extension activities, such as disseminating the results of research developed to society and participating in institutional extension projects.

Individualized Plan

a) Teaching - Goals:

In the area of undergraduate teaching, the hired professor must be directly involved in teaching activities in the Bachelor's Degree in Physics, Medical Physics or Degree in Physics courses offered by IFUSP, or in Physics subjects offered in the various courses of other USP units. This has been the rule within IFUSP, given the generalist training in physics of the professors. Thus, the hired professor will be responsible for classes in theoretical and/or experimental subjects that may, depending on demand, be entirely under their direct responsibility, a typical situation for the most advanced subjects in undergraduate courses, from the third to the fifth year. They may also work under the supervision of a team in the case of subjects with multiple classes, such as basic physics subjects, typical of the first two years. As they progress professionally,

they may move on to coordinating these subjects. Pedagogical improvement throughout the career is very important and, in addition to traditional lectures, modern pedagogical initiatives that stimulate students' skills are expected.

Postgraduate education is strongly encouraged. IFUSP professors regularly teach subjects in postgraduate courses, alternating or concurrently with the undergraduate teaching load.

Specific staff training is a goal from the very beginning for new professors at IFUSP. Thus, newly hired faculty members are encouraged to immediately join one of the graduate programs, where they supervise students in master's and/or doctoral programs. At the undergraduate level, supervising students in scientific initiation, teaching and extension projects is a natural consequence of other activities.

The hired professor is expected to assume responsibility for undergraduate and graduate courses, progressing to a prominent role in staff training. They are also expected to supervise undergraduate and graduate students, training qualified personnel, linked to ethical principles and science's commitments to society.

b) Research and Innovation - Goals:

The rich research activity comes from the selection of researchers in dynamic areas. The notable consequence is the rapid action of newly hired researchers in obtaining financial resources from state, federal and international research funding agencies to develop the research project presented immediately after being hired, which must be consistent with that presented in the competition. This procedure, encouraging academic independence, ends up reflecting on the ongoing activity throughout the career. The planning of the new candidate is, therefore, directed towards their integration into an existing research group at IFUSP, whenever possible, counting on the support of the technical staff and the cooperativeness to guarantee a physical space suitable for the development of projects.

The impact of this work is directly observed in scientific production, with publications of articles in journals in the top quartile of the main indicators (Clarivate, Scimago, Scopus), a requirement emphasized by our Postgraduate Program in Physics. Another highlight is innovation, which can be observed by obtaining patents, high-quality technological products and by interacting with sectors outside the Academy.

Internationalization is an essential issue. Permanent integration with institutes abroad is recommended, fostered by support for international cooperation, encouraging the establishment of partnerships. For professors who do not have international experience before being hired, this experience is encouraged through a post-doctoral internship abroad, with an expected stay of up to one year of activity throughout the professor's career.

Therefore, the pursuit of academic independence is expected, with the capture of financial resources by proposing challenging research projects to funding agencies. Additionally, it is expected that the professor will develop leadership in the area, seeking national prominence and international visibility, and that he or she may evolve into the leadership of research teams.

c) Culture and Outreach - Goals:

University outreach is a tradition at IFUSP, as demonstrated by the activities developed by the members of the research groups. Examples of these activities are: participating in schools/workshops for high school teachers; in exhibitions for the general public, held in spaces at IFUSP itself or in public spaces; in other existing activities such as the Physics Show, the Demonstration Laboratory, the USP Fair and the Professions, etc., or engage in their own initiatives, such as lectures or bibliographic production in scientific dissemination.

The hired professor will have access to a productive environment to develop their extension activities, mainly in the area of science dissemination and support for the teaching of Physics. In addition, partnerships established with companies, in the development of products and projects, are also encouraged, with cooperation agreements already signed, which show those who join another path to directly meet the demands of society.

Therefore, it is expected that the person will act directly in the return of innovations to society. They must contribute to the dissemination and education of the lay public. It is also expected that they can train qualified personnel to meet the challenges that society proposes.

3) Expected impact of the hiring:

Ensure the regular offering of essential disciplines in the area, as well as any other discipline offered by IFUSP in its undergraduate and graduate courses. Simultaneously, the development of research projects in an independent and self-financed manner is expected, producing new scientific knowledge and sharing it with society.

In the medium term, the hired professor is expected to propose graduate disciplines aligned with their developed research projects, enriching the academic curriculum of the institute. In addition, the person should supervise master's students, contributing significantly to the graduate program, and seek to expand scientific collaborations, both within IFUSP and with external groups, including international partnerships. Additionally, participation in administrative activities is also expected, as a member of Boards, Committees and Congregation.

In the long term, the hired professor is expected to play an important role in the training of high-level human resources, teaching and coordinating teams in disciplines and supervising doctoral students and post-doctoral students. In the area of Culture and Outreach, the professor is expected to actively participate in activities already established at IFUSP, in addition to engaging in his/her own initiatives, such as lectures, bibliographic production in scientific dissemination, and other outreach activities. Additionally, greater participation in administrative activities is also expected, such as course coordination and vice-coordination, committee presidency and vice-presidency, department heads and vice-heads, among others.