

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

Announcement IF-63,2024

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 General 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 Biophysics**” 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 **1245457** at the General Physics Department is open for applicants for 90 days, from **September 12th, 2024, at 12:01 a.m. to December 10th, 2024, at 11:59 p.m. (GMT 3, Brasília time)**. The following is the detailed description of the program for the examinations:

Physics III (4302211) - Coulomb Law, Electric field, Gauss Law, Electrostatic potential, capacitance and dielectrics, electric current, magnetic field, Lorentz force, Ampere Law, Faraday Law, inductance, magnetic materials, electric circuits, integral and differential forms of Maxwell equations.

Thermodynamics (4302308): 1. First law of thermodynamics. Temperature, entropy, and cyclical processes. Ideal gas law. Thermodynamics coefficients, specific heat; 2. The second law of thermodynamics, thermodynamic stability. Fundamental relation and state equations. Thermodynamic potentials, Helmholtz's free energy, Enthalpy and Gibbs' free energy. Legendre transformations and convexity. Thermodynamic identities and Maxwell's relations; 3. Third law of thermodynamics and its fundamental consequences. Phase transitions, latent heat, Clausius-Clapeyron equation. Van der Waals equation and criticality; 4. Ideal gas mixtures, Entropy of mixing. Binary mixtures. Solutions. Magnetic systems, Curie's law, and ferromagnetic phase transitions. Dielectrics. Debye's Law.

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-63, 2024, approved during the 609th Ordinary Session of the Institute of Physics Committee, held on 06/27/2024. Decree GR 8318, 2024, 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, September 9th, 2024.

ANNEX – JUSTIFICATION FOR THE GRANTING OF THE FACULTY POSITION

Current Situation of the Department/Area

The Department of General Physics (DFGE) has a long-standing tradition in experimental biophysics research, with its roots in the historic Biophysics Laboratory, which has been active since the department's founding. Over the past decades, two new laboratories have been established in the field of experimental biophysics, significantly expanding the scope of research conducted at DFGE. These laboratories have been pivotal in advanced investigations into topics such as drug and genetic material transport, interactions between cell membranes and peptides or drugs, cellular mechanics and thermodynamics, as well as exploring the interface between physics, chemistry, and biology. Equipped with recently modernized state-of-the-art technologies, the laboratories offer a wide range of techniques, including electron paramagnetic resonance, optical absorption, differential calorimetry, steady-state fluorescence, light scattering, nuclear magnetic resonance spectroscopy, cellular microrheology, and metabolomics. These resources enable cutting-edge research, positioning DFGE as a center of excellence in experimental biophysics.

General Objective of Faculty Hiring

The hiring of a new faculty member aims primarily to strengthen research in experimental biophysics, promoting greater integration between the biophysics laboratories of the Department of General Physics (DFGE) and the Institute of Physics as a whole. This new faculty member could collaborate more closely with the two currently active biophysics professors, enhancing existing research lines and opening new opportunities for multidisciplinary research within the DFGE.

In addition to the focus on research, the new hire will play a fundamental role in teaching, delivering essential courses in biophysics, as well as any other courses within the Physics program.

INDIVIDUALIZED PLAN

a) Teaching - Goals

- Contribute to ensuring the offering of any required course provided by IFUSP in its undergraduate and graduate programs.

b) Research and Innovation - Goals

- Strengthen and expand research in experimental biophysics, focusing on the integration of biophysics laboratories within the DFGE and the Institute of Physics as a whole.
- Develop new research lines in biophysics, seeking funding for these initiatives both through official support foundations and private sources.
- Supervise graduate students in experimental biophysics research projects, contributing to the training of new researchers in the field.
- Establish and foster scientific collaborations with other groups, both within and outside of IFUSP, expanding the impact and reach of the research conducted.

c) Culture and Extension – Goals

- Contribute to existing activities at IFUSP, such as the Demonstrations Laboratory and IFUSP's participation in the USP and Professions fair, among others, or engage in their own initiatives, such as lectures or the production of scientific outreach literature.

EXPECTED IMPACT OF THE HIRING

The hired individual should ensure the regular offering of essential courses in biophysics as well as any other courses provided by IFUSP in its undergraduate and graduate programs. Simultaneously, the new faculty member is expected to begin implementing new research lines in experimental biophysics, integrating them into the existing laboratories at IFUSP.

In the medium term, the hired individual should propose graduate courses linked to the new research lines to be explored. Additionally, they should contribute to the graduate program by supervising master's students. Finally, it is expected that the individual will have sought collaborations with research groups outside of USP, including international groups, and/or with other research groups at IFUSP.

In the long term, the hired individual should contribute to the training of human resources by supervising doctoral students and postdoctoral researchers. In the area of Culture and Extension, it is expected that the hired individual will have contributed to existing activities at IFUSP, such as the Demonstrations Laboratory and IFUSP's participation in the USP and Professions fair, among others, or have engaged in their own initiatives, such as lectures or the production of scientific outreach literature.