

ANNOUCEMENT OF 01 (ONE) OPEN TENURE-TRACK FACULTY POSITION AT THE DEPARTMENT OF PHYSICS AND MATERIALS SCIENCE OF THE SÃO CARLOS INSTITUTE OF PHYSICS, UNERVISITY OF SÃO PAULO, BRAZIL, LEVEL MS3, RDIDP (FULL-TIME DEDICATION TO TEACHING AND RESEARCH) - **REGISTRATION IS NOW OPEN.**

The Director of the São Carlos Institute of Physics of the University of São Paulo invites applications for 1 (one) full-time tenure-track faculty position in the field of **Theoretical Physics or Computational Physics**. The position nº 1236610 at the Department of Physics and Materials Science is open for applicants for 60 days from July 4th 2022 at 8:00 a.m. to September 1st 2022, at 6:00 p.m. (GMT-3, Brasilia Time, Brazil). Salary is R\$ 13,357.25 (month, in Brazilian real), non-negotiable. This position comprises full-time dedication to research and teaching, level MS-3, RDIDP. The following is the detailed description of the academic discipline and respective program for the examinations in the field of **Theoretical Physics or Computational Physics**:

Modern Physics (7600019) and the respective program that follows: 1 - Quantization of energy, momentum and electrical charge: 1.1 Blackbody radiation and energy quantization, 1.1.1 Phenomenology: Radiation Laws, Stefan's Law, Wien's Law, 1.1.2 Modes of a cavity and the Rayleigh-Jeans distribution, 1.1.3 Planck and the quantum of energy, 1.1.4 The specific heat of solids of Einstein, 1.2 Photoelectric Effect, 1.3 Compton Effect and the quantization of momentum, 1.4 Quantization of charge and the discovery of the electron, 1.4.1 Cathode Rays, 1.4.2 Thomson Experiment, 1.4.3 Experiment from Millikan. 2 - The atom: 2.1 The classical atom, 2.1.1 Thomson's model, 2.1.2 Radioactivity and the α -particle scattering, 2.1.3 Rutherford's experiment and the discovery of the atomic nucleus, 2.1.4 Rutherford's atomic model, 2.2 The quantum atom, 2.2.1 Absorption and emission spectra of atoms, 2.2.2 The spectrum of the Hydrogen atom, 2.2.3 Zeeman effect, 2.3 The Bohr atomic model, 2.3.1 Postulates and the one electron atom, 2.3.2 Franck Hertz experiment, 2.3.3 Bohr-Sommerfeld's Quantization, 2.3.4 Sommerfeld model and fine structure. 3 - Particles, waves and the Equation of Schrödinger: 3.1 De Broglie's Postulates, 3.1.1 Wave-particle Duality, 3.1.2 Reinterpretation of Bohr-Sommerfeld quantization, 3.1.3 The uncertainty principle and its consequences, 3.2 The equation of Schrödinger and simple quantum systems, 3.2.1 Interpretation and properties of the wave function, 3.2.2 Free particle and wave packets, 3.2.2 One-dimensional potentials - barriers and potential wells, 3.2.3 One-dimensional harmonic oscillator, 3.2.4 Hydrogen Atom, 3.2.5 General Aspects of Hydrogen Atoms many electrons.

APPLICATIONS

1- Applications must be submitted exclusively via the website <https://uspdigital.usp.br/gr/admissao> during the period stated above. Applicants must download, sign and submit the available application form addressed to the Director of the São Carlos Institute of Physics, containing his/her personal data and the

field (speciality) of the Department for which he/she is applying, accompanied by the following documents:

I – Detailed Curriculum Vitae, in Portuguese or English, list of published papers, academic activities, and any complementary information that enables assessing the merits of the applicant in the specific field of this announcement, and associated documents proving the information provided, in digital format;

II – Proof of a Ph.D. degree valid in Brazil, or accredited by the University of São Paulo;

III – For Brazilian male applicants, proof of discharge from military service;

IV – For Brazilian applicants, copy of voter identification card;

V – For Brazilian applicants, proof of having voted in the last election or detailed certificate issued by the Electoral Court less than 30 days before the start of the registration period;

VI – Proof of vaccination against Covid-19 (complete vaccination schedule) and any booster doses;

VII – Research project, in Portuguese or English, in accordance with the field (speciality) of this call.

– Links from Dropbox or Google Drive or any other similar referring to pages subject to change by the applicant will not be admitted as proof of the items presented in the Detailed Curriculum Vitae.

– 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.

– It is the sole responsibility of the applicant to verify the integrity and to preserve the order of the uploaded files in the link: <https://uspdigital.usp/gr/admissao>.

– It is the sole responsibility of the applicant to present his/her personal documents (front and back) in a legible format. If the applicant omits anything from the application process or fails to correct any unsuccessful, illegible or incomplete upload during the application period, the application will be rejected as incomplete.

– Documents submitted out of the application period will not be admitted, even if an appeal is taken.

2. The Congregation of the São Carlos Institute of Physics will judge and announce the formal acceptance of the applications.

I – The examination of the candidates will take place within 30 to 120 days, after the formal acceptance of the applications.

II – The candidate is fully responsible for keeping himself/herself informed about all stages of the process in the São Paulo State Official Gazette (*Diário Oficial do Estado de São Paulo, Caderno Executivo I, Seção 'Concursos', Subseção 'Universidade de São Paulo'*).

MORE INFORMATION

Further information and relevant rules for the examination are available at the **Academic Assistance Department** of the São Carlos Institute of Physics, University of São Paulo, and e-mail atac@ifsc.usp.br, and <https://www2.ifsc.usp.br/portal-ifsc/concurso-publico-para-professor-doutor-edital-atac-ifsc-32-2022/>

São Carlos, July 20th, 2022