



Edital nº ATAc-IAG/044/2023

CALL FOR ONE FACULTY POSITION IN THE DEPARTAMENTO DE ASTRONOMIA OF THE INSTITUTO DE ASTRONOMIA, GEOFÍSICA E CIÊNCIAS ATMOSFÉRICAS - UNIVERSIDADE DE SÃO PAULO, BRAZIL

The Dean of the Instituto de Astronomia, Geofísica e Ciências Atmosféricas of the Universidade de São Paulo (IAG/USP), São Paulo, Brazil, invites applications for a full-time tenure-track position. The call will be open for 90 (ninety) days, from **November 23rd, 2023, at 8 a.m., to February 21st, 2024, at 5 p.m (GMT -3)**. This position number 1240927 comprises full-time dedication to research and teaching, level MS-3, RDIDP, and the non-negotiable entry-level annual salary (MS-3 level) is R\$ 191.893,26 plus benefits, relative to May 2023, at the Departamento de **Astronomia**, in **Astronomy** area, under the terms of art. 125, paragraph 1, of the General Rules of USP. A detailed description of the program for the examinations is presented as follows:

AGA0215 – Fundamentals of Astronomy: (1) Mechanics of the Solar System: Observing the sky. Orbits and gravity. (2) Structure and Formation of the Solar System: Planets. Minor bodies and Transneptunian objects. Formation of the Solar System. Exoplanets. (3) Earth & the Moon: Earth's rotation. Seasons. Phases of the Moon. Tides. Eclipses. (4) Radiation: Nature of light. Electromagnetic radiation. (5) Spectra. Atomic structure. Formation of spectral lines. Doppler effect. (6) Telescopes and Detectors: Telescopes. Optical detectors and instruments. Infrared. Radio telescopes. Space astronomy. (7) The Sun: Atmosphere. Activity. Solar cycle. Solar interior. Energy production. (8) Stars: Brightness. Color. Spectral classification. HR diagram. Binary stars. (9) Distances: Parallax. Distance scales. Variable stars. (10) Stellar Evolution: Evolution after the Main Sequence. Red giants. Planetary nebulae. (11) Compact Objects: End of life for high-mass stars. Neutron stars. Pulsars. Black holes. (12) Our Galaxy: Interstellar Medium: Components. Star formation. The Milky Way: Structure. Rotation curve. Galaxy mass. Galaxy formation. (13) Normal and Active Galaxies: Types of galaxies. Properties of galaxies. Active galaxies. Gravitational lenses. (14) Structure of the Universe: Distribution of galaxies in space. Galaxy evolution. Dark matter. (15) Cosmology: Age of the Universe. Models of the Universe. Big Bang. Inflationary universe.

The concurs will be disciplined by Brazilian constitutional principles, notably that of impersonality, as well as by the provisions of the Statute and General Regulations of the Universidade de São Paulo and the Regulations of IAG/USP.

1. Applications must be submitted exclusively via the website <https://uspdigital.usp.br/gr/admissao> in the period stated above, and the candidate must fill in the requested personal data and attach the following documents:



I - Detailed Curriculum Vitae (memorial) outlining the candidate's experience, list of published papers, academic activities, and any complementary information that enables the evaluation committee to assess the merits of the applicant in the specific field of this announcement, and associated documents supporting the information provided. The registration system will request independent digital files for memorial and supporting document(s). A detailed memorial is the presentation of a reflexive analysis of the candidate's academic formation, professional experiences, publications, and other information concerning academic and professional life, indicating motivations and meanings;

II - proof that the candidate holds a Ph.D. degree awarded by USP, recognized by it, or of validity in Brazil;

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

IV - For Brazilian applicants, an Electoral Acquittance Certificate or Detailed Certificate issued by the Electoral Court less than 30 days from the beginning of the application period;

V - Official identity document.

VI - Research project, which should be presented observing, when applicable, the Guidelines for the Presentation of Dissertations and Theses of USP – ABNT. The textual elements of the internal part of the project (Introduction, Development, and Conclusion) should occupy a maximum of 20 pages in digital format. The project can be written in Portuguese or English.

§ 1st – Supporting documents of the memorial referred to, in item I, such as models, works of art, or other materials that cannot be digitized, shall be presented until the last business day preceding the beginning of the public competition.

§ 2nd - Links to Dropbox, Google Drive, or any other website whose content can be changed by the applicant will not be accepted as supporting documents.

§ 3rd - For item II, defense minutes without homologation information will not be accepted when the Ph.D. granting title depends on this procedure within the issuing Educational Institution. The applicant must be aware that, in this case, the absence of homologation proof will imply the rejection of the application.

§ 4th - Applicants already working at USP as professors are exempted from requirements III and IV, provided that they have complied with them at the time of their initial contract.

§ 5th - Foreign applicants are exempted from requirements III and IV and must prove that they are in a regular situation in Brazil.

§ 6th – An appointed foreign applicant may only take office if holding a temporary or permanent visa, which grants the holder permission to exercise remunerated activities in Brazil.



§ 7th - Upon registration, applicants with special needs must submit a request for the necessary conditions being provided during the examinations.

§ 8th - It is the sole responsibility of the applicant to verify the order of the uploaded files at <https://uspdigital.usp.br/gr/admissao>. Be aware that uploading files in a different order will imply a rejection of the application.

§ 9th - It is the sole responsibility of the applicant to verify the integrity (front and back) and readability of the uploaded files, being the candidate aware that, if he/she does not remedy any irregularity in uploading an incomplete or illegible document during the registration period, the application will be rejected.

§ 10 - By no means, extra documents will be accepted once the period of application is closed.

§ 11 - Upon registration, the candidate who self-identifies as black, brown, or indigenous shall indicate his/her interest in participating in the differentiated scoring system provided for in item 12 and its paragraphs of this Notice.

§ 12 - To be entitled to the bonus for self-declared black and brown candidates, the candidate must have phenotypic traits that characterize him/her as black, black, or brown.

§ 13 - The self-declaration as black or brown made by the candidate who expresses his/her interest in participating in the differentiated scoring system will be subject to confirmation through a hetero-identification board.

§ 14 - In the event of non-confirmation of self-declaration of racial affiliation, the candidate will be disqualified from the competition, and if appointed, may be subject to the annulment of their admission to the public service or employment, following an administrative procedure in which they are guaranteed the right to due process and a full defense, without prejudice to other applicable sanctions.

§ 15 - To confirm the self-declaration of the indigenous candidate, the Administrative Registry of Indigenous Birth (RANI), or in its absence, the Administrative Registry of Indigenous Birth (RANI) of one of their parents, shall be required at the time of registration.

§ 16 - Exceptional situations may be evaluated by the Inclusion and Belonging Council, which may confirm the candidate's self-declaration as indigenous through a combination of a memorial and an ethnic affiliation statement signed by chiefs, tuxauas, indigenous community leaders, associations, and/or representative organizations of indigenous peoples in their respective regions, under the penalties of the law.

§ 17 – The current regulations for presenting documents related to self-declaration as Black, Brown, and Indigenous, as well as for their verification, are available on the website of the General Secretariat of USP (<https://secretaria.webhostusp.sti.usp.br/?p=12343>).



§ 18 - For the purposes of item III, the documents listed in article 209 of Federal Decree No. 57,654/1966 will be accepted. Male candidates who have reached the age of 45 (forty-five) by December 31st of the previous year to the opening of registrations are exempt from providing these documents.

§ 19 - 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 Portuguese will be identical.

2. The Board of Academic Affairs of IAG/USP will judge and announce the formal acceptance of the applications.

Sole paragraph - The examination of the candidates will take place within 30 to 120 days, after the formal acceptance of the applications (counting from the date of publication in the São Paulo State Official Gazette).

3. The examination of the candidates will be carried out according to objective criteria, in two phases, and graded by each member of the Examining Committee:

1st phase (eliminary) - written exam (weight 1).

2nd phase - I) Analysis and public examination of the memorial (weight 5);

II) Teaching exam (weight 2);

III) Public defense of the research proposal (weight 2).

§ 1st - The call for candidates to take the exams will be published in the São Paulo State Official Gazette.

§ 2nd - Candidates who present themselves after the scheduled time will not be allowed to take the exams.

§ 3^o - In the evaluation of the tests by the judging committee, the expressed purpose for creating the position (granting of the teaching position) to which this competition is intended will be taken into account, as available in the annex to this notice.

4. The written exam, which will deal with a matter of general and doctrinal order, will be carried out under the provisions of art. 139 and its single paragraph of the General Regulations of USP.

I - The examining committee will prepare and announce a list of ten topics, based on the program detailed above, 24 (twenty-four) hours before the drawing of the topic, being permitted to require candidates to carry out other activities related to the concurs during this period;



- 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 on the claim and if necessary, replace the topics under objection;
- III - after drawing the topic, the non-extendable period of five hours of the exam begins;
- IV - sixty minutes, after the drawing, it will be allowed to consult books, periodicals, and other bibliographic documents;
- V - the notes made during the consultation period may be used during the exam, and should be written on initialed papers by the examining committee and attached to the final text;
- VI - the written exam, which will be read in public session by the candidate, will be copied and delivered to the members of the examining committee when the session is opened;
- VII - each exam will be evaluated, individually, by the members of the examining committee;
- VIII - candidates who obtain, from the majority of the members of the examining committee, a minimum score of 7 (seven) will be considered qualified for the 2nd phase;
- IX - the examining committee will present, in public session, the scores received by the candidates.
5. At the end of the evaluation of the written exam, each candidate will receive a final score from each examiner, taking into account the possible application of differentiated scoring according to item 12 of this Notice.
6. Only the successful candidates in the first phase will participate in the second phase.
7. The evaluation of the memorial, expressed by a global grade, including argument and evaluation, should reflect the merit of the candidate.
- Sole paragraph – the grading of the memorial must consider the following:
- 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 other university honors.
8. The teaching exam will be public, with a minimum duration of forty and a maximum of sixty minutes of lecture.
- I - then examining committee, based on the program detailed above, will organize a list of ten topics, which the candidates will know immediately before drawing the topic;



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 on the claim and if necessary, replace the topics under objection;

III - the drawing of the topic will be done twenty-four hours before the teaching exam, and the candidate is waived during this period;

IV - the candidate can use the teaching material that he/she deems necessary;

V - if necessary, the candidates will be divided into groups of a maximum of three, observing the order of registration, to draw the topics and conduct the exam.

VI - When the 60th minute of the exam is reached, the examining committee will interrupt the candidate.

VII - If the lecture finishes before reaching 40 minutes, the examining committee will assess a zero score to the candidate in the teaching exam.

9. The public defense of the research project aims to assess the scientific knowledge and previous experience on the topic proposed by the candidate; the clarity of the candidate's answers to the examining committee questions; the adequacy of the proposal to the aforementioned area of knowledge, in addition to its originality and feasibility.

I - for the public defense of the research proposal, the candidate must make a presentation of, at most, 15 (fifteen) minutes of the proposal;

II - the defense will be carried out in the form of a dialogue, at most 60 (sixty) minutes for all examiners and 60 (sixty) minutes for the candidate.

10. At the end of the assessment of the exams, each candidate will receive from each examiner a final grade, which will be the weighted average of the grades awarded by him/her in both phases, observing the weights set out in item 3 and the potential application of differentiated scoring according to item 12 of this notice.

11. Exam grades may range from zero to ten to the first decimal place.

12. Differentiated scoring will be applied to black, brown, and indigenous candidates, as specified herein.

§ 1 - The calculation formula for the differentiated scoring to be assigned to black, brown, and indigenous candidates in all stages of the public competition is:

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

Where:

- PD is the differentiated score to be added to the grades of all black, brown, or indigenous candidates who expressed interest in participating in the differentiated scoring.



- MCA is the average score of the open competition among all candidates who scored, excluding those disqualified, i.e., those who did not reach the minimum score mentioned in items 4 and 14 of this Notice. "Open competition" refers to all candidates who scored and did not declare themselves as black, brown, or indigenous, as well as those who, having declared themselves as such, chose not to participate in the differentiated scoring.

- MCPPI is the average score of the PPI competition among all candidates who scored, excluding those disqualified.

§ 2 - The formula for applying the differentiated scoring to the final grades of black, brown, and indigenous candidates in each stage of the public competition is:

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

Where:

- NFCPPI is the final grade in the stage of the public competition, after the application of differentiated scoring, which will determine the candidate's ranking in the competition stage, limited to the maximum score specified in the notice. At the end of the public competition stage, the final grade becomes the candidate's simple grade.

- NSCPPI is the simple grade of the beneficiary candidate, to which the differentiated scoring will be applied.

§ 3 - The calculations referred to in paragraphs 1 and 2 of this item must consider two decimal places and fractions equal to or greater than 0.5 (five-tenths) must be rounded to the next whole number.

§ 4 - The differentiated scoring (PD) provided in this item applies to all eligible beneficiaries, i.e., those who have achieved the minimum performance established in the competition notice, considering the simple grade for this purpose.

§ 5 - If there are no beneficiaries of differentiated scoring among the eligible candidates, the differentiated scoring will not be calculated.

§ 6 - The differentiated scoring will not be applied when, in the calculation formula for differentiated scoring (PD), MCPPI (average score of the PPI competition) is higher than MCA (average score of the open competition).

13. The result of the contest will be proclaimed by the examining committee immediately after its conclusion, in a public session.
14. To be eligible, candidates must achieve a minimum final grade of seven from most examiners.
15. Each examiner will nominate the candidate he/she graded the highest.



16. The candidate receiving the most nominations by the Examining Committee will be indicated for an appointment.
17. The effective appointment to the position depends on a medical examination conducted by the State's Department of Medical Skills (DPME), under Article 47, VI, of Law No.10.261/68.
18. The appointment of the teacher approved in the contest, as well as the other resulting measures, will be ruled by the terms of Resolution USP No. 7271/2016.
19. The teacher in RDIDP must maintain an exclusive employment relationship with USP, under the terms of article 197 of the General Rules of USP.
20. The public competition will be valid immediately and will be proposed for appointment only to the candidate indicated for the position announced by this call.
21. The candidate will be summoned for tenure by the São Paulo Official State Gazette.
22. Further information, as well as the rules of the public competition, are available to those interested in the Academic Affairs Assistance of the IAG/USP, by e-mail: atac-iag@usp.br.

ANNEX I – JUSTIFICATION FOR THE CONCESSION OF THE TEACHING POSITION

The Department of Astronomy has been engaged in significant areas of basic research since its inception, covering Planetary Systems, Stars, Milky Way, Galaxies, Cosmology, Plasmas, High Energies, Astrochemistry, Astrobiology, Dynamics, Fundamental Astronomy, and Instrumentation. Each of these major themes has at least one research group and its respective research lines. The department's activities in the field of education have expanded notably with the establishment of the Bachelor's Degree in Astronomy in 2009 and the Professional Master's Degree in Astronomy Teaching in 2013. It is an excellent Bachelor's program that has seen increasing demand in the entrance exam, with an average of 57 candidates per vacancy over the last 10 years, representing the highest demand in the entire career in which the course is inserted. In the last 2 years, over 50% of entrants have completed the Bachelor's Degree in Astronomy, surpassing the average of Exact Sciences courses. The Professional Master's Degree meets the social demand for qualified educators to work in high school and higher education, as well as in cultural dissemination centers such as planetariums and science museums. Its establishment complemented activities at the postgraduate level. The faculty consists of 32 Ph.D. professors, with 25 in the RDIDP category and 7 as seniors. The distribution at different career levels is not balanced: 5 (20%) assistant professors, 13 (52%) associate professors, and 7 (28%) full professors. Some have expressed the desire to retire soon, given that the average age of the faculty is 61 years. In the next 6 years, we anticipate the compulsory retirement of 10 professors: 4 Full Professors, 5 Associate Professors, and 1 Assistant Professor. On the other hand, in 2023, we will receive a Professor MS-3 and a Professor MS-6, and we have 2 ongoing competitions, one for MS-3 and another for MS-6.



Overall Objective of Hiring the Teacher

The hiring of a Professor MS-3 aims to renew the department's faculty, ensuring excellence in Teaching, Research, and Extension. Between 2014 and 2023, there were 10 retirements, 1 dismissal, and 1 death, impacting all major areas of Astronomy. During the same period, 4 professors (3 MS-3 and 1 MS-6) were hired, and we have 1 competition at the MS-3 level open for a specific area, Radioastronomy, which was particularly affected by recent retirements and was prioritized by the department. The result is a deficit of 5 positions. For this new position, it was decided that the competition should be open for the major area of Astronomy and Astrophysics, aligned with the Institutional Academic Project, to expand the range of candidates and thus allow the selection of a future leader who can join one of the department's groups. The new teacher must fit into one of the department's research lines, be able to teach 2 or more undergraduate courses and 1 or more graduate courses, and participate in Culture and Extension activities.

Individualized Plan

Teaching - Goals

The future teacher will work in the Undergraduate and Graduate programs of the Department. This position will be open to attract the highest number of high-level candidates capable of teaching general courses (e.g., Fundamentals of Astronomy) or specific ones, depending on their expertise. In the medium term, it is expected that the teacher will take on roles in the coordination of Undergraduate and Graduate courses.

Research and Innovation - Goals

The teacher will work in one of the cutting-edge areas of Astronomy, considering the Department's and IAG's strategy. The specific area will depend on their expertise but should align with our Academic Project, including Stellar Astrophysics, Solar System Astrophysics, Interstellar Medium, Galactic Astronomy, Galaxy Chemical Evolution, Plasma and High-Energy Astrophysics, Extragalactic Astrophysics and Cosmology, Astrochemistry, Astrobiology, Solar System Dynamics and Exoplanets, Fundamental Astronomy, Astronomical Instrumentation, and Astronomy Teaching. The Department hosts the INCT-Astrophysics and the São Paulo Astronomy Network (SPANET), as well as two NAPs (NARA - Center for Radioastronomy Research Support and LabCosmos – Center for Cosmology). In the short and medium term, it is expected that the teacher will submit Research Aid projects and maintain a publication rate in high-impact international journals consistent with CNPq productivity scholarship recipients, as is the case for 19 of our professors. In the medium and long term, this teacher should lead their own research group, with national and/or international collaborations.

Culture and Extension – Goals

The future teacher will initially participate in 1 or more extension activities offered by the Department (e.g., Overview in Astronomy, Fundamentals of Astronomy for High School Teachers, Concepts of Astronomy, Astronomy for the Elderly). It should be noted that a significant part of the curricularization of IAG's extension will be concentrated in joint,



interdepartmental disciplines, but with strong leadership from the Department of Astronomy. In the medium and long term, they should coordinate extension and science outreach projects (e.g., Astrominas, Cecilia), as well as collaborate in serving high schools, ongoing activities of the Department.

Expected Impact with Hiring

The expected immediate impact is to have a new qualified, productive faculty member capable of teaching at the undergraduate and postgraduate levels, an urgent need given the reduction in the number of faculty. Additionally, the future faculty member should integrate into one of the research lines aligned with the Department's Academic Project, linked to our projects funded by FAPESP: instrumentation for the giant GMT telescope, CUBES spectrographs (VLT), and MOSAIC (ELT); LLAMA radio telescope; CTA and ASTRI Mini-Array in high energies. The Department of Astronomy is among the few at USP and in the country that has consistently received the highest rating from CAPES since the beginning of such evaluations. It is expected that the new faculty member will contribute to impactful publications, the training of masters and doctors, and the coordination of research projects.

Note: For the production of legal effects of the present document in the Federative Republic of Brazil an attached version issued in Portuguese is required. In the event of a conflict between the English and Portuguese versions, the Portuguese version will prevail.