

Request: **822473**

PUBLIC NOTICE

I publicly announce that, by my order of 15/07/2022, an international tender to fill 1 vacancy for the position of junior researcher, is hereby open for 10 working days following the publication of the present notice at *Diário da República* [Official Journal of the Portuguese Republic]. The stated position will be held under a public service employment contract of specified duration at the Department of Physics of the Faculty of Science and Technology of the University of Coimbra, under the Project UIDB-04564/2020). Funding through IN1234 CEECINST/00099/2021- Ciências Exatas (Concurso Estímulo ao Emprego Científico Institucional).

This international tender shall be conducted pursuant to paragraph 1 of Article 57 of the *Lei Geral do Trabalho em Funções Públicas* [Public Employment Act], to the Decree nr. 57/2016, in its latest version, to the Regulatory Decree nr. 11-A/2017, of December 29th, and the *Regulamento de recrutamento, contratação, prestação de serviço e avaliação de doutorados contratados a termo, na Universidade de Coimbra* [Regulation on the Recruitment, Hiring, Service Provision and Assessment of Fixed-term PhD Employees at the University of Coimbra], hereinafter referred to as RRCPADCT, as well as further applicable legislation, for the scientific areas of Physics, at the University of Coimbra.

I. Reference, Place of Work and Monthly Wage

I.1 Public tender reference: IT057-22-11856

I.2. Place of Work: Unit 4564 – Physics Center of the University of Coimbra

I.3. Job description:

The candidate will perform one of the following functions (in the application the candidate must specify the profile (only one) he/she is applying for):

1 (UK) – Research in the field of the QCD phase diagram combining experimental information from heavy ion collisions with theoretical ab-initio and model calculations. The focus are the different phases of the QCD phase diagram, how to identify the critical endpoint and to access the properties of the quark-gluon plasma and transport properties of nuclear matter such as shear/bulk viscosity, electric/thermal conductivity, also under the influence of strong magnetic fields.

2 (UK) – Development of new theoretical models for dark matter candidates, in particular exotic particles with feeble interactions with Standard Model particles, such as axions and other scalar fields, and primordial black holes. The researcher will explore new non-thermal mechanisms for cosmological dark matter production, aiming to establish links with other open problems in cosmology and particle physics and to identify new astrophysical signatures.

3 (UK) – Research on microwave spectroscopy, carrying out pulsed molecular-jet experiments using state-of-the-art chirped-pulse Fourier transform microwave spectroscopy instrumentation. The researcher should articulate experimental work with quantum chemistry calculations to simulate and analyze high-resolution rotational spectra for structure determination of isolated molecules and molecular complexes and actively engage in method development for applications in molecular physics and analytical chemistry.

4 (UK) – Research on multifunctional materials, including, among others, materials with magnetic and ferroelectric order and chiral magnets based on transition metals and lanthanides. The researcher will carry out experimental work using various materials characterization techniques (XRD, SEM, XRF, AFM), DC, AC and torque magnetometry and measurement of electrical and thermal transport properties. This experimental work will be complemented with experiments using synchrotron radiation, neutron scattering and muon spectroscopy, as well as DFT calculations and theoretical modeling of the material properties.

5 (UK) – The researcher will develop and explore computationally a tumor growth model. This model will include cell division as a function of tissue pressure, as well as the tumor colony heterogeneity. Special focus will be given to the description of blood flow in the tumor, as well as the influence of increased permeability of vascular walls on tissue irrigation. The model will be used to simulate different modalities of tumor treatment, including radiotherapy and chemotherapy..

I.4. Gross monthly wage: **2.153,94** euros, corresponding 33rd level to the single remuneration table, approved by Ordinance nr. 1553-C/2008, of December 31st, and combined with Decree-Law nr. 10-B/2020, of March 20th, which updated the base remuneration and the value of the basic monthly remuneration of the Public Administration.

I.5. Maximum duration: three years, renewable for periods of one year, up to a maximum of six years.

II. Admission Requirements

II.1. Applicants shall be at least 18 years of age or older; not be inhibited to holding a job in the public sector, nor forbidden to perform the intended position; applicants shall also be in good health and possess the psychological profile required for the job and shall meet the compulsory vaccination requirements, in accordance with Article 17 of Law nr. 35/2014, of June 20th, in its latest version.

II.2. At the time of application, applicants shall hold a Ph.D. in the above-mentioned scientific area(s) or in a correlated one, in which case the applicant's scientific background shall demonstrate the ability to thoroughly develop work in the main field(s) of the tender.

II.3. Applicants who are non-native speakers of either Portuguese or English shall attest their proficiency at level C1 of the Common European Framework of Reference for Languages (CEFR) in, at least, one of those languages.

III. Application

III.1. Submission: Applicants must access and register on the electronic platform apply.uc.pt, to submit their application,

selecting the procedure to which they intend to apply.

The documents inserted in the application are exclusively in digital portable document format (pdf), with the exception of the documents mentioned in points **III.2.3.** to **III.2.5.**, which may be delivered in other digital formats.

The application submission is carried out by completing the sections available on the Apply UC electronic platform, under "My application".

When formalizing the application, if a classified document is submitted that reveals commercial or industrial secrets, or secrets relating to literary, artistic or scientific property, the applicant must select this option, available on the platform for each document entered, under penalty of the work in question being freely accessed by any of the other applicants, in consultation process.

III.2 Documents to be delivered:

III.2.1. *Curriculum Vitae*, duly dated and signed, for the last five years (or the extended period to which the decision of the jury refers, if requested by the candidate, on grounds of suspension of scientific activity for socially protected reasons, namely parental leave, prolonged serious illness, and other situations of unavailability for legally protected work, in which case the candidate must indicate the period of assessment desired and attach a document proving the grounds invoked).

The Curriculum Vitae must contain a preamble, if it exists, containing the history of all contractual relations of the candidate during the last five years (or the extended period to which he/she is entitled) and respective periods, identifying the category detained, the nature of the bond and the respective scientific area and explaining, precisely, the employment bond detained and the institution where he/she performs functions on the date of application. It must also include a substantiated synopsis showing that the candidate has a specialty appropriate to the scientific area or areas for which the competition is open.

The candidate must also organize his/her Curriculum Vitae in such a way as to respond separately to each one of the criteria listed in point **IV.2.** and respective subpoints, as well as, under penalty of exclusion, identify and substantiate, from among the works he/she produces, which 3 to 6 he/she considers to be his/her most significant contributions in the perspective of each evaluation criterion, explained in point **IV.2.**

III.2.2. Copy of qualification certificates. Opponents of the tender who hold a doctoral degree obtained abroad, until the end of the application deadline, under penalty of exclusion, must:

- Prove the respective recognition, in the terms of the Decree-Law nr. 66/2018, of August 16th,

or,

- Attach proof that they have requested it, under the terms of Decree-Law nr. 66/2018, of August 16th.

The failure to present the recognition of the degree at the time of contracting, under the terms of Decree-Law nr. 66/2018 of August 16th, is grounds for exclusion.

III.2.3. Autonomous copy (one PDF file per paper) of the 3 to 6 papers that the candidate considers best represent his/her most significant contributions to the advancement of knowledge in the area or areas for which the tender is open.

III.2.4. Copy of all other papers mentioned in the *Curriculum Vitae*.

III.2.5. Any other elements that the candidate considers relevant.

III.3. All application documents indicated in item **III.2.** shall be submitted in Portuguese or English, with the exception of those indicated in **III.2.4.** and **III.2.5.** that may be submitted in another language, if there is no Portuguese or English version of them. Whenever the originals of the documents referred to in **III.2.2.** and **III.2.3.** are produced in a different language, a translation document into Portuguese or English shall be delivered. Except for diplomas, which may be written in Latin, no translation is required.

III.4. Applications that are not duly instructed or do not fulfil the formal criteria for admission to the competition, under the terms defined in the legislation in force and in this notice, will not be admitted. The submission of any required documentation outside the stipulated deadline also determines the non-admission to the contest.

III.5. The present tender ceases with the occupation of the positions or, when the positions cannot be totally occupied, due to the inexistence or insufficiency of candidates to continue the contest.

IV. Selection methods and criteria

IV.1. Selection Methods: Assessment of scientific background and CV [ABC (90%)] and Interview [I (10%)].

IV.2. In the assessment of the candidate's background and CV, scientific performance and outreach and management activities are considered, in accordance with the criteria mentioned below.

IV.2.1. Scientific performance of the candidate in the research area(s) for which the tender is open, in the last five years or the extended period requested, if accepted by the committee, with a weight of 80%, based on the following parameters:

IV.2.1.1. Scientific, technological, cultural or artistic production: Relevance, quality and national and international recognition of the scientific, technological, cultural or artistic production, with particular focus on the works/papers selected as their most significant contributions to the development of the field;

IV.2.1.2. Applied research: Activities of applied or practice-based research, their impact and national and international recognition, with particular focus on the works/papers indicated as having the greatest impact;

IV.2.2. Outreach and management activities in the last five years in the area(s) for which this tender is open, with a weight of 20%, based on the following parameters:

IV.2.2.1. Outreach activities: Outreach and dissemination of knowledge activities carried out in the context of the promotion of culture and scientific practices;

IV.2.2.2. Management activities: Management of science, technology and innovation programs, observation and monitoring of the scientific and technological system or the higher education system, in Portugal or other countries, and also the coordination and participation in scientific projects.

IV.3. The assessment of the candidate's background and CV is based on the criteria and parameters defined in IV.2, and is duly justified and graded on a scale of 0 to 20 points (calculated to the hundredths) by the selection committee.

IV.4. The evaluation of the interview is made according to the criteria and weightings defined in **IV.2.**, being duly substantiated and expressed by the jury on a scale of 0 to 20 values, with valuation up to hundredths, and aims exclusively at clarifying aspects related to the results of the candidates' research. The interview is public and may be attended by all interested parties.

IV.5. All the candidates complying with the application requirements are subject to the background and CV assessment, which shall be conducted under the criteria and evaluation parameters defined in **IV.2.** and **IV.3.**. However, only the first 4 candidates with the best scores in the ranking resulting from the assessment of the background and CV will be called for the interview.

IV.6. Candidates who obtain a score under 9.5 points in one of the selection methods will be excluded from the tender procedure, pursuant to paragraphs 3 and 4 of Article 13 of RRCPADCT, and the next method, if it exists, is not applied. Candidates who fail to appear, who desist or who, although approved, were not included in the lots used, will also be excluded from the tender.

IV.7. The final score (*FS*) is expressed in a scale of 0 to 20 points, calculated to the hundredths, based on the following formula:

$$FS = (ABC \times 90\%) + (I \times 10\%)$$

V. Selection Process

V.1. First meeting:

V.1.1. The Selection Committee decides, first, on the admission and exclusion of applications. In case of non-fulfilment or partial fulfilment of any of the requirements defined in section **III.** above, the Committee decides whether this insufficiency prevents accepting the application, or if having no relevant impact on the evaluation process, the application may nevertheless be accepted.

V.1.2. After deciding on the admission and exclusion of candidates, the Committee begins the procedures relating to the phased application of the selection methods. First, it assesses the scientific background and CV of all the admitted candidates. The merit of the candidates will only be assessed based on their previous experience in the scientific area(s) for which the tender is open, according to the selection criteria and evaluation parameters described in this public notice. The candidates' merit and experience in other areas shall not therefore be taken into consideration by the Committee. The ranking of the candidates in the ABC method is based on the scores given to each candidate.

V.1.3. Candidates both excluded and admitted to the interview shall be notified by Public Notice, under the terms mentioned below in section **VI**.

V.2. Second meeting:

V.2.1. The Selection Committee conducts the interview with the admitted candidates, which shall have the maximum duration of one hour, although the Chairman of the Committee may decide to extend it further for a period of 30 minutes. The Committee shall only consider the merit of the candidates based on their experience in the scientific area(s) for which the tender is open. The interview is conducted by the Chairman of the Committee, although other committee members may also interact with the candidate. This interview shall be held in Portuguese, unless the candidate or any members of the Committee are not proficient in that language. In this case, it may be conducted in English, upon decision of the Chairman.

V.2.2. Candidates who fail to attend the interview at the set time and place shall be excluded from the tender procedure. Similarly, candidates failing to attend a duly scheduled teleconference call shall also be deemed excluded.

V.2.3. After conducting and scoring the interviews, the Committee calculates the final score and ranks the candidates approved in both methods by applying the formula defined above in **IV.7**.

V.2.4. The notification of the draft's final decision to the candidates, which contains the list with the proposed ordering of the successful candidates as well as the list of the excluded candidates, is made according to the terms of point **VI** of this notice.

V.3. Candidates can, if they so wish, appeal the decision of the Committee, in due respect for their right to a fair hearing, pursuant to Article 121 of the Código do Procedimento Administrativo [CPA - Code of Administrative Proceedings]. The period to submit an appeal begins on the day the public notice with the Selection Committee's deliberation is published, pursuant to paragraph 8 of Article 113 of the CPA.

V.4. Third meeting:

V.4.1. If any of the candidates exercises their right to be heard, the Selection Committee shall hold a third meeting in order to analyze the request, and the candidates will be notified of its deliberations, under the terms of section **VI** herein.

V.4.2. If the Selection Committee finds the candidates' allegations well founded, it shall proceed according to its deliberations, thereby notifying the candidates under the terms of **VI.3** herein.

V.4.3. If the Selection Committee finds such allegations unfounded, following the candidates' notification under the terms of **VI.3** herein, the procedure shall then be submitted to the Rector for approval.

V.5. All the candidates will be notified regarding the approval decision under the terms of section **VI.** herein. The administrative records of the tender may be consulted by the candidates, through prior scheduling, requested by sending an e-mail to the Human Resources Management Service e-mail address: sgrh@uc.pt.

VI. Tender timetable and notification of candidates

VI.1. The tender timetable will be available on the Apply UC electronic platform until the deadline for submission of applications. The candidates are notified by public notice of the following acts, the dates of which must be included in the competition calendar: the list of admitted and excluded candidates; the date, place and identification of the selected candidates for the interview, as well as, among them, the identification of the candidates to whom the President of the Jury has granted the interview by teleconference; the draft final decision of the competition; the decisions regarding eventual allegations of the candidates and, the final result of the competition, after homologation. It is mandatory that the tender timetable include the dates of publication of Public Notices.

VI.2. If any of the terms established in the timetable of the tender procedure cannot be met, an updated timetable will be published on that same date on the University of Coimbra website, replacing the previous one. If the interview cannot be conducted on the appointed date, the new date will be announced in a public notice confirming that it is to be held and containing the list of admitted and excluded candidates.

VI.3. Notifications by public notice as provided for in point **VI.1.** shall be made by publication in the Apply UC electronic platform, pursuant to paragraph d) of no. 1 of article 112 of the CPA and article 51 of the RRCPADCT, and shall produce their effects pursuant to article 113 of the CPA.

VI.4. The entire tender records may be consulted by candidates, upon previous appointment, requested via e-mail sent to the Human Resources Management Service e-mail address: sgrh@uc.pt.

VII – Selection Committee:

Chairman:

José António de Carvalho Paixão, Professor Catedrático do Departamento de Física da Faculdade de Ciências e Tecnologia da Universidade de Coimbra

Committee members:

Brigitte Anabelle Vaz Abreu Hiller, Investigadora Coordenadora do Departamento de Física da Faculdade de Ciências e Tecnologia da Universidade de Coimbra;

João Carlos Lopes Carvalho, Professor Associado com Agregação do Departamento de Física da Faculdade de Ciências e Tecnologia da Universidade de Coimbra;

Manuela Ramos Marques da Silva, Professora Associada com Agregação do Departamento de Física da Faculdade de Ciências e Tecnologia da Universidade de Coimbra;

João Pedro Trancoso Gomes Rosa, Professor Auxiliar do Departamento de Física da Faculdade de Ciências e Tecnologia da Universidade de Coimbra.

Alternate committee members:

João Manuel de Sá Campos Gil, Professor Associado com Agregação do Departamento de Física da Faculdade de Ciências e Tecnologia da Universidade de Coimbra;

Rui Davide Martins Travasso, Professor Auxiliar do Departamento de Física da Faculdade de Ciências e Tecnologia da Universidade de Coimbra;

Joaquim Marques Ferreira dos Santos, Professor Catedrático do Centro de Investigação LIBPhys.

In the event of absences or impediments of the Chairman, he/she shall be replaced by the Committee member indicated first, which, in the same case of impediment, will be replaced by the Committee member indicated next and so on.

This Public Notice will be published in Portuguese in *Diário da República*, 2nd Series, and on the website *Bolsa de Emprego Público* (Governmental Public Employment Portal), as well as in both Portuguese and English in the Apply UC computer platform and in the EURAXESS Portugal Portal, at <https://www.euraxess.pt/>.

Pursuant to paragraph h) of Article 9 of the Portuguese Constitution, the Public Administration, as employer, actively promotes a policy of equal opportunities between men and women in access to employment and professional development, and acts to prevent all forms of discrimination.

In accordance with Decree-Law nr. 29/2001, of 3 February, candidates with disabilities take precedence over others when they obtained the same classification, and this prevails over any other eligible preference.

The University of Coimbra clarifies that, in reference to paragraph 5 of Article 6 of Decree-Law nr. 57/2016, of August 29th, it makes no commitment to considering that it has a strategic interest in opening tenders for tenure-track research or teaching positions.

Paço das Escolas, The Rector

(Amílcar Falcão)