



DEPARTMENT OF PHYSICS

RESEARCH FELLOWSHIP FOR A GRADUATE STUDENT – 1 VACANCY

27th of December of 2022

A call for tenders is open for 1 Research Student Scholarship (BI – Graduate Student) within the scope of the project “The Structure of Multiquarks”, reference CERN/FIS-PAR/0023/2021, funded by FCT/MCTES through national funds (State Budget – OE), under the following conditions:

Scientific area: Physics

Scientific sub area: QCD and Hadron Physics

Admission requirements:

High motivation and interest in research in Hadron Physics is expected of the candidate. Basic knowledge in Nuclear and Particle Physics is required. The candidate should have a solid background in Quantum Field Theory, in particular its application in QCD and Hadron Physics, and should present a clear demonstration of his/her ability to carry out a research program. A good command of English is also required.

Preference criteria: Experience in software development with C++ or Fortran90. Prior knowledge of the Bethe-Salpeter equation, within QCD, and practical experience of its numerical solution.

As set forth FCT Research Scholarship Regulation No. 950/2019 of December 16, 2019, article 3 and 6, candidates for “BI” (Research Grants) must comply as a rule condition for the award of the scholarship, the effective inclusion in study cycles leading to the attribution of academic degrees or in courses not leading to an academic degree. Courses that do not confer an academic degree correspond to the courses provided for in subparagraph e) of paragraph 3 of article 4 of Decree-Law No. 74/2006 of 24 March and must be developed in a higher education institution in association with at least one R&D unit, including a course plan in one or several research areas of the unit.

Work plan: The goal of this project, which lies at the interface between Hadron Physics and Nuclear Physics, is to study new functional methods to calculate the properties of the deuteron. The deuteron will be modeled as an effective system of two bodies, a proton and a neutron, which are described in a quark-diquark model, and which interact through the exchange of a quark. The successful candidate will develop a software code to solve the Dyson-Schwinger/Bethe-Salpeter equations of this system numerically, and then study the structure of the deuteron in detail.

Applicable legislation and regulations: The granting of the Research Scholarship will be carried out upon the signing of a contract between the University of Évora and the scholarship holder, as set in the template https://www.fct.pt/apoios/Minuta_Contrato_Bolsa.docx, pursuant to the Research Scholarship Statute (Law No. 40/2004 of August 18 and Decree-Law No. 123/2019 of August 28) and in accordance with the legislation and Regulation of Research Grants of the Foundation for Science and Technology, IP in force, regulation nº950/2019 of December 16, 2019: <https://www.fct.pt/apoios/bolsas/regulamento.phtml.pt> and other applicable rules.

Place of work: The work will be carried out at the Physics Department of the University of Évora and/or at LIP, Lisbon, under the scientific supervision of Prof. Alfred Stadler and Prof. Ana Maria Formigal de Arriaga.

Duration of the scholarship(s): The scholarship will have a duration of 6 months, starting on February of 2023. The scholarship contract may eventually be renewed until the end of the budget allocation of the funding project CERN/FIS-PAR/0023/2021.

Amount of monthly maintenance allowance: The amount of the scholarship corresponds to € 875,98 according to the table of scholarships awarded directly by FCT, I.P. in Portugal (<http://fct.pt/apoios/bolsas/valores>), payments being made monthly, by check or bank transfer.

Selection methods: The selection methods to be used will be as follows: evaluation of the Curriculum Vitae, evaluation of previous experience appropriate to the proposed work program, and a letter of recommendation, with the respective weights of 60%, 30%, and 10%. If the panel considers it necessary, it may interview the best-ranked candidates for tie-breaking purposes. For these candidates, the interview will contribute 20% to the total score, and the previous criteria are rescaled to 48%, 24%, and 8%, respectively. If none of the applicants meets the appropriate profile, the scholarship will not be awarded.

Composition of the Selection Jury:

Chairman: Prof. Dr. Alfred Stadler (U. Évora)

1st Member: Prof. Dr. Ana Maria Formigal de Arriaga (U. Lisboa, FCUL)

2nd Member: Prof. Dr. Elmar Biernat (U. Lisboa, CFTP-IST)

1st Substitute: Prof. Dr. Orlando Olavo Aragão Aleixo e Neves de Oliveira (U. Coimbra)

2nd Substitute: Prof. Dr. Gernot Eichmann (U. Graz, Austria)

Advertising/notification of results: The provisional list of the evaluation results, ordered by final grade, will be posted in a visible and public place in the School of Sciences and Technology of the University of Évora, located in the College Luís António Verney, and will also be communicated by email to the candidates. After communication of the provisional list of the evaluation results, the candidates will have a period of 10 working days to, if they wish, make a statement in a preliminary hearing of interested parties. The final decision will be issued after the analysis of the statements presented during the preliminary hearing of interested parties.

Application deadline and submission of applications: The tender is open from 3rd to 18th of January of 2023 and the results of the selection will be published by 24th of January of 2023.

Applications must be formalized, obligatorily, by sending an application letter accompanied by the following documents: Curriculum Vitae, copy of the certificate of qualifications, including a discriminative list of the grades obtained in the various curricular units, other supporting

documents considered relevant and a letter of recommendation. The letter of recommendation must be sent separately by the respective author.

For the purposes of application, the certificates may be replaced by a declaration of honor signed by the candidate, but failure to demonstrate, during the contracting phase, possession of the required degree on the application deadline date or failure to present proof of enrollment or registration in a study cycle or non-degree-conferring course, for scholarships with this component, imply the cancellation of the candidate's application.

Academic degrees obtained in foreign countries require registration by a Portuguese Institution in accordance with Decree-Law no. 66/2018, of August 16 and Ordinance No. 33/2019, of January 25th.

The presentation of the certificate is mandatory for the signing of the contract. More information can be obtained at: <https://www.dges.gov.pt/pt/pagina/recognition?plid=374>

Applications must be sent by email to:

Prof. Dr. Alfred Stadler
Department of Physics of the University of Évora
email: stadler@uevora.pt

