



Laboratório de Instrumentação e Física Experimental de Partículas

**ANNOUNCEMENT FOR THE OPENING OF AN INTERNATIONAL SELECTION TENDER PROCEDURE FOR
DOCTORATE HIRING PURSUANT TO ARTICLE 23 OF DECREE-LAW NO. 57/2016 OF 29 AUGUST,
UPDATED BY THE LAW Nº 57/2017, OF 19TH JULY**

The LIP Board of Directors deliberated the opening of an international selection tender for one vacancy for a doctorate holder to perform duties of research in the scientific areas of **Data Science and Experimental Particle Physics**, within the scope of project “**BigDataHEP: Understanding Big Data in High Energy Physics: finding a needle in many haystacks**” (reference POCI-01-0145-FEDER-029147), financed by FEDER - Fundo Europeu de Desenvolvimento Regional funds through the COMPETE 2020 - Operacional Programme for Competitiveness and Internationalisation (POCI), Portugal 2020, and by Portuguese funds through FCT - Fundação para a Ciência e a Tecnologia/Ministério da Ciência, Tecnologia e Ensino Superior. The successful candidate will perform duties as researcher pursuant to the Portuguese Labour Law. The contract will be initially for one year, renewable for up to a maximum of three years.

1) **Application requirements:** the candidates for the position should hold a PhD, or equivalent, in high energy physics, computer science, data science or related fields. We are seeking a highly motivated researcher with experience in advanced techniques in data analysis and aiming to contribute to the Competence Center in Simulation and Big Data at LIP. The candidate should have previous experience on the development, testing and application of deep neural networks and/or other multivariate techniques for classification and regression problems. Computing skills in C++/Python programming languages, as well as in Scikit-learn, Keras, Theano, Tensorflow or other data analysis and processing packages will be favourably considered.

2) **Workplan:** the LIP Competence Center in Simulation and Big Data aims to foster the effective collaboration between the different LIP groups working on these areas and to boost the capability to exploit the existing expertise both internally and externally, towards the university and the industry. The different LIP groups have a vast range of competences in data analysis and simulation tools, including physics models, Monte Carlo generators, detector simulation tools, big-data handling techniques and data mining in the context of Experimental High Energy Physics.

3) The selected candidate is expected to integrate the LIP Competence Center in Simulation and Big Data in the context of the project BigDataHEP, contributing to expand the inhouse know-how in advanced data analysis techniques. In this scope, he or she should contribute to the development of one or more of the research lines of the project:

- efficient techniques for data processing, exploring optimized reuse in repeated high-volume data;
- machine learning for physics aware learning, object reconstruction and searches for new physics phenomena at the Large Hadron Collider;
- machine learning in the context of dark matter and rare event searches, as well as on astroparticle physics;
- application of machine learning techniques used in High Energy Physics to the industrial context.

The focus of the present position is on machine learning and processing of large volumes of data and thus no prior experience in High Energy Physics is required. It is crucial, however, that the candidate demonstrates the ability to adapt to the challenging conditions of competitive international collaborations.

4) Applicable Legislation:

- Decree-Law no. 57/2016 of 29th August, which approved the hiring regime of doctorate holders, aiming to stimulate the scientific and technological employment for all knowledge areas (RJEC), updated by the Law nº 57/2017, of 19th July.
- Labour Code approved by Law no. 7/2009 of 12th February, under its current Reading.
- Regulatory Decree nº 11-A/2017, of 29th December.

5) Pursuant to article 13 of RJEC, the tender selection panel shall be formed by: President of the jury, Dr. Nuno Castro and Members of the jury, Dr. Guilherme Milhano and Dr. David Rousseau.

6) Workplace shall be in one of the LIP nodes (Braga, Coimbra or Lisbon), upon agreement with the selected candidate.

7) Monthly remuneration to be paid is the one defined by article 15 (1) of the Law nº 57/2017, of 19th July, corresponding to level 33 of the Single Salary Table, approved by Order no. 1553-C/2008 of December 31st, i.e. 2.128,34 Euros.

8) Any national, foreign and stateless candidates who hold a doctorate degree in Physics, Computer Science, Data Science or related scientific area and a scientific and professional curriculum suited for the activity to be performed can submit their applications. In the event of the doctorate degree having been awarded by a foreign higher education institution, the degree must comply with the provisions of Decree-Law no. 341/2007 of 12th October.

9) Pursuant to article 5 of RJEC, selection is to be made based on candidate scientific and curricular career evaluation of the candidates whose application is considered admissible.

10) Scientific and curricular career evaluation of the position focuses on relevance, quality and currentness:

a) of scientific, technological production in the last five years, deemed most relevant by the candidate;

b) of research activities, applied or based on practical work, developed in the last five years, deemed most impactful by the candidate;

c) of knowledge extension and dissemination activities developed in the last five years, namely under the scope of the promotion of culture and scientific practices, deemed most relevant by the candidate;

d) of the activities of management of science, technology and innovation programmes, or the experience in observing and monitoring the scientific and technological, or higher education system in Portugal or abroad.

11) The five-year period mentioned in the previous item can be extended by the panel, if requested by the candidate, whenever the suspension of scientific activities is reasoned by socially protected grounds like paternity leave, long-term serious illness, and other legal situations of unavailability to work.

12) The evaluation criteria are the following: evaluation of the CV of the candidates, namely their scientific merit and research capabilities as demonstrated by the diffusion of the scientific results achieved and by the participation on research projects in scientific fields relevant for the proposed work program.

13) Each member of the panel will value the criteria for each candidate, taking into account the requirements of the duties to be performed, the adequacy of previous experience, his/her relationship to the relevant areas and subareas of the current call, and his/her experience in scientific data processing.

14) The panel shall deliberate by means of roll-call vote justified under adopted and disclosed selection criteria, with no abstentions allowed.

15) Minutes of panel meetings shall be executed and shall include a summary of all occurrences of said meeting, as well as of all votes casted by the members and respective reasoning, and shall be provided to candidates whenever required.

16) After selection criteria application, the panel shall prepare a sorted list of approved candidates and respective classification.

17) Panel's final decision shall be validated by the leader of the institution, who is also in charge of deciding about the hiring.

18) Application formalization shall be made by sending:

a) motivation letter addressed to the President of LIP;

b) detailed Curriculum Vitae;

c) certificate or diploma copy. Recognition of foreign diploma should be delivered after the selection;

d) other documentation relevant for the evaluation of qualifications in a related scientific area.

19) Candidates shall submit their application files and supporting documentation, preferably in a digital form, in PDF format, via email to natalia@lip.pt, in person at Av. Prof. Gama Pinto, nº 2, 1649-003 Lisboa, during working hours, or by post to the same address. When submitted by post, applications must be sent by registered post with acknowledgement of receipt sent until the last day of application deadline, which is hereby set on **17th September 2018, 17:00** (Lisbon time).

20) All candidates who formalise their applications in an improper way or fail to prove the requirements imposed by this tender are excluded from admission. In case of doubt, the panel is entitled to request any candidate to present further documentation supporting his/her statements.

21) False statements provided by the candidates shall be punished by law.

22) Both admitted and excluded candidate list and final classification list shall be posted at Av. Prof. Gama Pinto, nº 2, 1649-003 Lisboa, published in the website of LIP: <http://www.lip.pt> and all candidates shall be notified by email with delivery receipt.

23) Preliminary Hearing and Final Decision Deadline: Pursuant to article 121 of the Administrative Procedure Code, after notified, all candidates have 10 working days to respond. Panel's final decisions are pronounced within a period of 90 days, from application deadline.

24) This tender is exclusively destined to fill the vacancy and can be terminated at any time until approval of final candidate list, expiring with the respective occupation of said vacancy.

25) Non-discrimination and equal access policy: LIP actively promotes a non-discrimination and equal access policy, wherefore no candidate can be privileged, benefited, impaired or deprived of any rights whatsoever, or be exempt of any duties based on their ancestry, age, sex, sexual preference, marital status, family and economic conditions, instruction, origin or social conditions,

genetic heritage, reduced work capacity, disability, chronic illness, nationality, ethnic origin or race, origin territory, language, religion, political or ideological convictions and union membership.

26) The panel has approved this announcement in meeting held on 25th July 2018.

27) Pursuant to Decree-Law no. 29/2001 of 3 February, disabled candidates shall be preferred in a situation of equal classification, and said preference supersedes any legal preferences. Candidates must declare, on their honour, their respective disability degree, type of disability and communication/expression means to be used during selection period on their application form, under the regulations above.