



LABORATÓRIO DE INSTRUMENTAÇÃO E FÍSICA EXPERIMENTAL DE PARTÍCULAS

LIP opens a call for one Research Student Fellowships for participation in the project “Collaboration in the HL-LHC Upgrade of the CMS experiment at CERN”.

1. Application Procedure:

The application has two stages: pre-selection and final selection. In order to qualify for the final selection stage and funding from FCT, the successful candidates in the pre-selection phase are required to have a Master degree in physics and to engage in a PhD program at IST, University of Lisbon.

2. Requirements for pre-selection phase:

The candidates for pre-selection should have or be about to obtain a Master in physics and should provide a clear demonstration of the ability to carry out a research program.

3. Work Plan

Development of the new MIP Timing Detector for the Upgrade of the CMS experiment in the High-Luminosity phase of the LHC (HL-LHC). The successful candidates will participate in the development of detector prototypes based on state-of-art scintillating crystals, silicon-photomultipliers and Application Specific Integrated Circuits (ASICs) developed at LIP-Lisbon. Visits to CERN to perform tests and measurements with dedicated SPS proton beams are foreseen. Visits to other research facilities to perform test of resistance to radiation are also foreseen.

In the HL-LHC Upgrade of the CMS detector, the LIP group in collaboration with Portuguese industry participates in the construction of a new MIP Timing Detector. The addition of a new Timing Detector in front of the calorimeters allows to measure the time of charge particles with a precision better than 50 ps, which is critical to separate the physics events for the large background expected at HL-LHC. The group is fully responsible for the design and construction of the readout system of the Barrel Timing Layer (BTL), a large detector with 330'000 sensors, benefiting from the long experience in the development and leadership of instrumentation projects.

The activities will be carried in the frame of the activities of one of the outstanding research groups in High-Energy Physics in Portugal. Citing the Report of the recent Institutional Evaluation performed by an international review panel nominated by FCT: “The CMS group, while small in size, is really outstanding and world-class.”

4. Place of work: Research activities will be developed at LIP-Lisbon (TagusLIP) and at CERN.

5. Documents: Applications must be formalized by an application letter attaching the following documents: Curriculum Vitae, two reference letters and academic certificate including the marks in all the courses at the University

6. Period of application: The Application should be submitted in pdf format until March 31, 2020 by e-mail to natalia@lip.pt