PhD Position

Search for Higgs pair production in the ATLAS experiment

SECTOR: Higher Education Institution

LOCATION: France, Grenoble

RESEARCHER PROFILE:

☐ First stage researcher,

INSTITUTION: Univ. Grenoble Alpes, University of Innovation

One of the major research-intensive French universities, Univ. Grenoble Alpes enjoys an international reputation in many scientific fields, as confirmed by international rankings. It benefits from the implementation of major European instruments (ESRF, ILL, EMBL, IRAM, EMFL*). The dynamic ecosystem, grounded on a close interaction between research, education and companies, has earned Grenoble to be ranked as the 5th most innovative city in the world. Surrounded by mountains, the campus benefits from a natural environment and a high quality of life and work environment. With 7000 foreign students and the annual visit of more than 8000 researchers from all over the world, Univ. Grenoble Alps is an internationally engaged university.

A personalized Welcome Center for international students, PhDs and researchers facilitates your arrival and installation.

In 2016, Univ. Grenoble Alpes was labeled «Initiative of Excellence ». This label aims at the emergence of around ten French world class research universities. By joining Univ. Grenoble Alpes, you have the opportunity to conduct world-class research, and to contribute to the social and economic challenges of the 21st century ("sustainable planet and society", "health, well-being and technology", "understanding and supporting innovation: culture, technology, organizations" "Digital technology").

* ESRF (European Synchrotron Radiation Facility), ILL (Institut Laue-Langevin), IRAM (International Institute for Radio Astronomy), EMBL (European Molecular Biology Laboratory), EMFL (European Magnetic Field Laboratory)

Key figures:

• + 50,000 students including 7,000 international students
• 3,700 PhD students, 45% international
• 5,500 faculty members
• 180 different nationalities
• 1st city in France where it feels good to study and 5th city where it feels good to work
• ISSO: International Students & Scholars Office affiliated to EURAXESS
SUBJECT DESCRIPTION:

The ATLAS group at LPSC Grenoble invites applications for a Ph. D. position.

The LPSC group has made significant contributions to the construction, commissioning and operation of the presampler of the ATLAS calorimeter, and to the installation of the IBL. It now contributes to the upgrade of the pixel detector. The group plays a leading role in the development of Jet/MissingET algorithms and in searches for physics beyond the standard model. It is progressively shifting the focus of its analysis effort to the search for Higgs pair production (HH).

The discovery of a new particle, H, with properties compatible with those of the Higgs boson of the standard model (SM) represents a milestone for particle physics. Despite its elegance, the SM has a number of shortcomings, and it likely only describes the low-energy limit of more complex fundamental physics. For example, the Higgs potential is postulated in an ad hoc manner, and no plausible explanations for its origin are given. The only way to experimentally constrain the shape of the Higgs potential, and to confront these constraints to the SM production is the measurement of the strength of the coupling of the Higgs to itself. The ability to experimentally study, at the LHC, the coupling of the Higgs boson to itself (in the HH pair production process) is therefore a powerful tool to make progress on one of today’s pressing questions in particle physics.

The successful candidate will contribute to the search for Higgs pair production using the full data set of Run 2 of the ATLAS experiment. This dataset is currently being accumulated, and data-taking will be concluded at the end of 2018. The successful applicant will be integrated into the LPSC analysis team consisting of senior researchers and post-docs. The LPSC analysis team works in close collaboration with other teams in France.

ELIGIBILITY CRITERIA

Applicants must hold a Master's degree (or be about to earn one) or have a university degree equivalent to a European Master’s (5-year duration).

Applicants will have to send an application letter in English and attach:
- Their last diploma
- Their CV
- A short presentation of their scientific project (2 to 3 pages max)
- Letters of recommendation are welcome.

Address to send their application: stark@in2p3.fr
SELECTION PROCESS
Application deadline: **June 27th, 2018** at 17:00 (CET)
Applications will be evaluated through a three-step process:

1. Eligibility check of applications on **June 28th, 2018**
2. 1st round of selection: the applications will be evaluated by a Review Board in June 2018. Results will be given in June 2018.
3. 2nd round of selection: shortlisted candidates will be invited for an interview session in Grenoble in the first week of July 2018. (if necessary)

**TYPE of CONTRACT:** temporary-3 years of doctoral contract

**JOB STATUS:** Full time

**HOURS PER WEEK:** 35

**OFFER STARTING DATE:** Oct 1st, 2018 at the latest

**APPLICATION DEADLINE:** June 27th, 2018

Salary: between 1768.55 € and 2100 € brut per month (depending on complementary activity or not)