

The experimental high energy physics group of the Centre for Cosmology, Particle Physics and Phenomenology (CP3, website: <https://uclouvain.be/en/research-institutes/irmp/cp3>) at UCLouvain in Louvain-la-Neuve (Belgium) invites applications for a 3-year position at the post-doctoral level to join its efforts in the CMS experiment data analysis.

Research activity in CP3 is equally strong on the theoretical as well as on the experimental and instrumental fronts. It is conducted by 15 faculty members and researchers, 21 post-doctoral fellows and 24 Ph.D. students. The main experimental collaborations include the CMS experiment at CERN, NA62 and the Virgo gravitational waves telescope. The CMS members currently focus on data analysis and related physics object software development, mostly within the Higgs, Top quark, and Exotica physics groups. UCLouvain hosts one of the Tier-2 centers of the LHC computing GRID that allows CMS data to be processed and analyzed. The group is also involved in research and development programs related to the upgrade of the CMS tracker for HL-LHC. On the phenomenological side a strong Monte Carlo development activity is present focused on the development of a wide range of tools, such as FeynRules, MadGraph, aMC@NLO, Delphes and MoMEMta. We are also strongly active in novel applications of Machine Learning in our field.

The selected candidate is expected to join the CMS experimental studies related to Higgs and top quark physics, building upon our experience with modern Machine Learning techniques and Effective Field Theory formalisms. The exact project will be defined with the candidates and could extend beyond these main topics. Service work (EPR) for the CMS collaboration is also expected.

The selected candidate will be given the opportunity to lead a well-defined analysis effort. Andrea Giammanco will act as supervisor (see <http://cp3.irmp.ucl.ac.be/Members/giammanco>). Collaboration is expected with Profs. Christophe Delaere, Vincent Lemaitre, Giacomo Bruno and several PhD students and postdoctoral fellows, and the analysis work will profit from close contact with the CP3 phenomenology group (Profs. Fabio Maltoni, Celine Degrande, Marco Drewes and their collaborators). It is also possible, although not mandatory, to contribute to our hardware activities, which are mainly devoted to upgrades of the Tracker system and led by Prof. Christophe Delaere, or to small non-CMS projects (e.g. Phenomenology, DELPHES developments, etc.) if they fit with the main analysis activity.

The selected candidate is expected to be based in Belgium for the duration of the contract, with visits at CERN when needed for research reasons and when not hindered by travel restrictions.

Applicants must have (or expect to receive soon) a Ph.D. in particle physics. The funding rules require that the candidates must be in the condition of international mobility, defined by our funding agency as not having resided or carried out their main activity (job, studies...) in Belgium for more than 24 months during the 3 years directly preceding the beginning of this postdoctoral fellowship, and that the Ph.D. was obtained not more than 6 years before. Within these constraints, we strive to offer equal opportunities irrespective of sex, sexual orientation, nationality, race, colour, ethnic or social origin,

religion or belief, political or any other opinion, disability, and in general any personal characteristics that is unrelated with the ability to perform high-level research.

The appointment is for 3 years. The salary is competitive and includes all social security benefits (information is available on request). The contract should start no later than June 2021. Contributions to teaching are possible but are not required. Although the position will remain open until a suitable candidate is found, interested persons are encouraged to apply as soon as possible, as a continuous screening of the applications will take place starting from the 6th of January. Applications should be submitted online (not by e-mail, please), and should consist of a cover letter (including a short research statement), a curriculum vitae, a list of publications with visible contribution by the candidate (including internal notes, proceedings, technical documents). Letters of recommendation (at least two) can be uploaded by your referees directly, after you apply.

For more information, please contact Andrea Giammanco at [andrea.giammanco@cern.ch](mailto:andrea.giammanco@cern.ch)

The form for applying is available at:

<https://cp3.irmp.ucl.ac.be/jobs/68>

We take the opportunity to also advertise the positions assigned by FNRS (the main funding agency for French-speaking universities in Belgium) through a national competition as announced here:

[https://www.frs-fnrs.be/docs/Reglement-et-documents/FRS-FNRS Mini-guide 2021 EN.pdf](https://www.frs-fnrs.be/docs/Reglement-et-documents/FRS-FNRS_Mini-guide_2021_EN.pdf)

The deadline for the FNRS applications at postdoctoral (Chargé de Recherche) and permanent (Chercheur Qualifié) levels is on 21 January 2021, the winners will be announced in June, and the earliest start of contract is on 1 October 2021 (later starts are also possible).

We are available to support excellent candidates, and it is of course possible to apply both to FNRS and to our postdoctoral fellowship. In the FNRS case, the condition of international mobility is not mandatory. The following CMS members at CP3 are eligible to act as "promoters" in a FNRS application at any career level: Giacomo Bruno ([giacomo.bruno@uclouvain.be](mailto:giacomo.bruno@uclouvain.be)), Christophe Delaere ([christophe.delaere@uclouvain.be](mailto:christophe.delaere@uclouvain.be)), Andrea Giammanco ([andrea.giammanco@cern.ch](mailto:andrea.giammanco@cern.ch)), Vincent Lemaitre ([vincent.lemaitre@uclouvain.be](mailto:vincent.lemaitre@uclouvain.be)).

More information about our CMS activities can be found

at <https://uclouvain.be/en/research-institutes/irmp/cp3/cms-0.html>