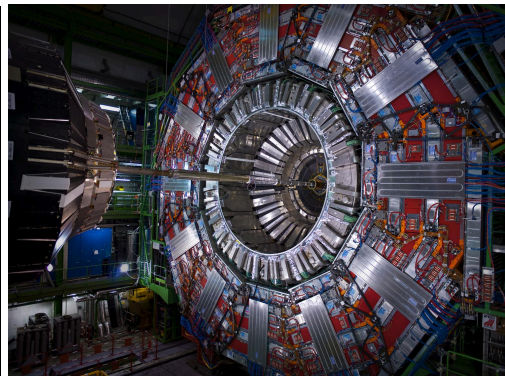
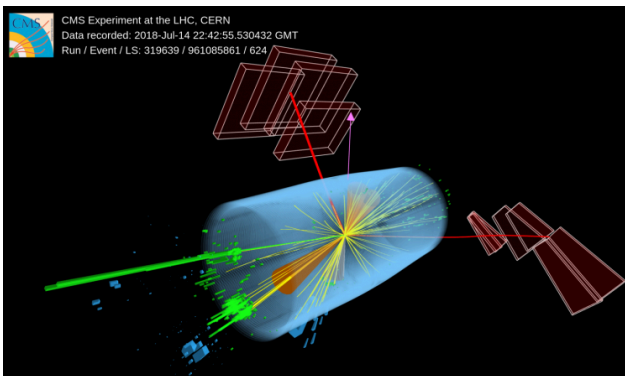


Predocctoral position in Experimental Particle Physics at CIEMAT (Madrid) Searches for exotic decays of the Higgs boson with the CMS experiment at the LHC

Contract code: [408-PREAT1-PDI24](#)

The CIEMAT - Física de Partículas (**CIEMAT-FP**) Unit hosts a predocctoral position for an outstanding young MSc graduate interested in working in the CIEMAT-FP group collaborating in the CMS experiment at CERN towards a PhD Thesis.



The CIEMAT-FP Unit is actively participating in the **CMS** experiment at the **Large Hadron Collider** (LHC) at CERN. The LHC is currently in an active period of data taking in Run 3 (2022-2026), while it is also preparing for the accelerator and detector upgrades for the upcoming High Luminosity (HL-LHC) phase of the collider starting 2030. The analysis of the new data and its combination with past data will allow not only to extend the current searches for physics beyond the standard model (SM) but also to perform precision measurements of many SM processes. Some current areas of interest of the CIEMAT-FP CMS group include the measurement of processes involving vector bosons, direct searches for new resonances with high momentum leptons and the determination of the properties of the Higgs boson. The CMS CIEMAT-FP group is heavily involved in the upgrade of the muon detector and in the development of new triggering algorithms.

The successful candidate will play a key role in a state-of-the-art search for **exotic decays of the Higgs boson** making use of the Run 3 data. He/she will also participate in the development of **novel triggering algorithms** that will enhance the data collection during the future HL-LHC. The position thus proposes a complementary approach to key questions of contemporary physics via both searches for new physics and the development of innovative detector techniques. We offer close supervision and a stimulating international environment, with expected stays at CERN to carry out and present the research work, undertake advanced training in specialized workshops and schools, and attend international conferences with the possibility of presenting own scientific results on behalf of the collaboration.

We seek candidates with a Master's Degree in Physics at the time of appointment, an excellent academic record, very good English knowledge and a high motivation towards the scientific field of High Energy Physics at the energy frontier. We also value experience in programming languages such as C++, python and scripting languages.

For further details, feel free to contact Cristina Martín Pérez (Cristina.Martin@ciemat.es) and/or Isabel Josa (Isabel.Josa@ciemat.es).

This position is associated to the funding program *Atracción de Talento de la Comunidad de Madrid 'César Nombela'* with reference number 2023-T1/COM-29356 and project title 'Artificial intelligence for data taking and Higgs boson characterization with CMS at LHC' (AI-CMS-LHC).

The CIEMAT Particle Physics Unit is an affirmative action/equal opportunity employer. Eliminating gender inequalities by promoting equal opportunities for men and women is a core compromise of our group and it is our commitment to establish the necessary actions to close the gender gap.