PhD position in scientific computing at CIEMAT: "Artificial intelligence technologies in experimental particle physics"

The María de Maeztu Unit of excellence for the research in particle, astroparticle physics and observational cosmology at CIEMAT (Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas) announces the upcoming opening of a predoctoral position for outstanding young MSc graduates interested in working on artificial intelligence applied to particle physics towards a PhD Thesis.

CIEMAT-FP participates in large particle physics experiments driven by international collaborations. These projects probe the Standard Model (SM) with increasing precision and search for new particles associated with physics beyond the SM. Both tasks require the identification of rare signals buried in immense backgrounds. The increasingly higher data rates and volumes produced by the detectors, in some cases reaching the exabyte scale, poses an additional challenge. The success of the scientific and experimental programmes relies on, among other factors, an efficient exploitation of the recent and future advances in computing technology and algorithms. For this reason, we are exploring and exploiting emerging computational paradigms and platforms. Machine learning methods are designed to exploit large datasets in order to reduce complexity and find new features in data. Incorporating machine learning in particle physics workflows will require significant research and development over the next years. The selected candidate will contribute to this endeavour.

The 4-year PhD contract (Formación de Personal Investigador-FPI) is funded by the Spanish Ministry of Science, Innovation and Universities through the "Programa Estatal de Promoción del Talento y su Empleabilidad en I+D+I" (FPI). This position is associated to the María de Maeztu Program for scientific excellence, a distinction awarded to the CIEMAT-FP Unit, reference number **MDM-2015-0509-19-2 "Física de partículas: Tecnologías de inteligencia artificial en física experimental de partículas".** The official call is available in http://www.ciencia.gob.es/portal/site/MICINN, the deadline for applications being **November 7th**. It is also announced at http://cfp.ciemat.es/predoc.

The candidate must hold a Master's Degree in Physics, Computer Science or similar, a good English knowledge and strong interest in the particle physics field and artificial intelligence fields. Experience in C++ and Python programming will be also valuable.

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The CIEMAT Particle Physics Unit of Excellence 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.