Predoctoral position in Laboratorio Nacional de Fusión at CIEMAT (Madrid)

Title: Artificial Intelligence techniques applied to Nuclear Fusion

Introduction: Nuclear Fusion is the energy source of the stars. Harnessing this kind of power would result in a virtually limitless form of energy that, unlike fossil fuels, emits zero greenhouse gases without producing long-life radioactive waste. However, several complex and undesirable phenomena may take place in the most promising configuration of these kind of devices and they represent a severe obstacle for the future commercial exploitation of fusion reactors.

Position: This PhD position is focused on the application of Artificial Intelligence (AI) techniques to nuclear fusion experimental data to tackle the abovementioned problems. Physics models will be extracted using these techniques to predict and to analyse instabilities. The objective is to solve key issues of these devices that may represent the ultimate solution towards a sustainable energy model.

Conditions: The 4-year FPI PhD contract is funded by CIEMAT. The candidate must have a Master's Degree in Physics or any branch of Engineering (following the Bologna Declaration) or alternatively be registered or admitted in a doctoral program at a university department on a related subject, at the time of signing the contract (see details in the official call).

Main considerations for selection are excellent grades, very good command of written and spoken English and experience in programming languages such as Matlab or Python.

The PhD student will be expected to work with massive databases, applying different AI methods to extract, model and characterize relevant physics phenomena. We offer close supervision and a stimulating international environment with possible research stays in the United Kingdom (JET), Japan (JT60-SA) and Germany (ASDEX-Upgrade), as well as presentation of results at meetings and conferences.

Thesis supervisors:

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CIEMAT 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.