



**POLITÉCNICA**

**DEPARTAMENTO DE INGENIERÍA ENERGÉTICA**



**Máster Universitario en “Ciencia y Tecnología Nuclear”**

**Master Erasmus Mundus SARENA (Safe and Reliable Nuclear Applications)**

WEBINAR

**“Fusion Energy at MIT: Smaller, cheaper, faster”**

**Pablo Rodríguez Fernández**

Research scientist at the Plasma Science and Fusion Center  
Massachusetts Institute of Technology (MIT)

MIT and the private company Commonwealth Fusion Systems are developing the first magnetic-confinement fusion device to produce net-energy plasmas. This ambitious goal, expected by the second half of this decade, will be possible thanks to new high-field magnet technology. Both empirical models and physics-informed supercomputer simulations show that SPARC will be capable of producing plasmas that generate ten times more energy than they will absorb, which will allow scientists to study the fascinating physics of burning plasmas in a small machine. This talk will introduce the key concepts required to understand the high-field path to fusion energy and the SPARC tokamak. We will discuss advancements in compact, high-field plasma science developed at MIT (e.g. Alcator C-Mod tokamak) and will put SPARC in context to other approaches to net fusion energy, such as ITER and DEMO.

Pablo Rodríguez Fernández did his doctoral research at MIT, receiving his Ph.D. in Nuclear Science and Engineering in 2019. Previously, he studied *Ingeniería Técnica Superior Industrial* at the Universidad Politécnica de Madrid (ETSII Industriales); followed by a M.Sc. in Mechanical Engineering at Drexel University (Philadelphia) and a research stay at Politecnico di Milano for his thesis Project. Currently, Pablo is a research scientist at the Plasma Science and Fusion Center from the Massachusetts Institute of Technology.

During his career, Pablo has received numerous awards. Among them, we can highlight the *Forbes 30 under 30* (2021), *Del Favero Doctoral Thesis Prize* for the most innovative advance in the field (2019), *Manson Benedict Award* for excellence (2018), *Cátedra Repsol Award* for the best master’s thesis project (2015) and *La Caixa Fellowship* for graduate studies in North America (2014).

**Monday June 28<sup>th</sup>, 2021, 15:30 to 17:30 (CET)**

Link to Zoom meeting: <https://short.upm.es/ajmjp>

Meeting ID: 868 9434 6028

Access code: 211846