



Universidad Carlos III de Madrid (UC3M, www.uc3m.es) invites applications to fill PhD position **ZARATHUSTRA-D1: Three-dimensional modeling of Electrodeless Plasma Thrusters.**

Position description and objectives:

Electrodeless plasma thrusters (EPTs), such as the Helicon thruster and the ECR thruster, promise many advantages over traditional electric space propulsion systems currently in the market. However, the complex physical processes involved in their operation are still not well understood. In particular, a robust theory of the electromagnetic heating of the electrons in the magnetized plasma and their anomalous transport perpendicular to the magnetic lines is still missing. Many aspects of the plasma acceleration in the external magnetic nozzle region require careful scrutiny as well.

The selected candidate will develop a three-dimensional, multi-fluid simulation code coupled with an electromagnetic solver to model and study the plasma dynamics and the EM fields in cylindrical EPTs and in the new fully-3D “Magnetic Arch Thruster” concept being developed at UC3M. The contract will be funded by the recently awarded **ERC Starting Grant project ZARATHUSTRA** (Revolutionizing advanced electrodeless plasma thrusters for space transportation). The candidate will join the Space Propulsion and Plasmas Team (EP2, <http://ep2.uc3m.es/>) at UC3M, and collaborate closely with other young PhD students and researchers fully dedicated to the project under the supervision of Dr. M. Merino.

Requirements and desirable profile:

- Young MSc holder (or MSc student with 60 ECTS passed at contract’s signature)
- Background in the following disciplines: Aerospace Engineering, Plasma Physics, Fluid Dynamics, Applied Mathematics, and/or Scientific computing. Excellent candidates from other disciplines are also invited to apply.
- Outstanding academic record; critical & creative thinking.
- International experience; team-working and communications skills.
- Good proficiency in English (oral & written).
- Ability to deal independently and proactively with scientific and engineering challenges.

What we offer:

- 3-year contract (with optional 1-year extension); annual gross salary in the 20k – 22k € range.
- Become part of a young, dynamic, highly qualified, collaborative team.
- Flexible working environment and schedule.
- Opportunity to travel to international conferences to present research activities.
- Opportunity to carry out research internships abroad.
- Health coverage under the National Health System.

How to apply:

Interested candidates must send their applications to mario.merino@uc3m.es indicating in the e-mail subject the reference “**ZARATHUSTRA-D1**,” and attaching in pdf format the following documents:

- CV (max. 4 pages), including relevant professional experience and knowledge.
- Copy of diploma and grades from previous university studies.
- A motivation letter of experience, interests, and research goals (max. 1 page).
- The contact information for two references (will be contacted during the hiring process).

Submission of applications is due by **October 15th, 2020**. Early applications are strongly encouraged, while later applications may be considered until the vacancy is occupied. Contract will begin in January 2021, though earlier/later start date can be agreed. More information at: <http://mariomerino.uc3m.es/>.