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Born: July 15, 1987—Tivissa, Spain

Nationality: Spanish

Current position

Teaching Assistant, Electric Propulsion Lab Tech. Officer, Universidad Carlos III Madrid, Spain *PhD Candidate*, Universidad Politécnica de Madrid, Spain

Areas of specialization

Space Propulsion; Plasma Physics; Aerospace Engineering.

Education

- 2010-2011 **Aerospace Engineering, Master's degree**, Universidad Politécnica de Madrid, Madrid, España.
- 2005-2010 **Aerospace Engineering, Bachelor's degree** (2004 Program - 5 years degree), Universitat Politècnica de Catalunya (UPC), Barcelona, Spain.
- 2010 **Professional Degree in Music** (LOE program), specializing in **Clarinet with honors**, at Barcelona Municipal Music Conservatory.

Appointments held

01/04/2013 - 31/03/2015

Teaching assistant in Computing Science, Department of Applied Mathematics, Escuela Técnica Superior de Ingenieros Aeronáuticos, UPM & funded by the FPU program, Department of Education, Culture and Sports, Government of Spain. (120 hours of teaching).

01/04/2012 - 31/03/2013

Research grant holder at the Department of Applied Mathematics, Escuela Técnica Superior de Ingenieros Aeronáuticos, UPM & funded by the FPU program, Department of Education, Culture and Sports, Government of Spain.

01/03/2011 - 31/03/2012

Research grant holder at the Department of Applied Mathematics, Escuela Técnica Superior de Ingenieros Aeronáuticos, UPM & co-funded by the European Commission under the 7th Framework Programme.

February-September

2010

Engineering intern at ALSTOM WIND to complete the Final Degree Thesis **with honors**. "*Study of the influence of Wind Turbine definition on its design loads*".

Academic year

2009/10

Mentor in the Enginycat program, funded by the Government of Catalunya. Supporting teacher for the Mechanics Department (Aeronautical Engineering), at ETSEIAT (UPC).

International Experience

01/02/2013 – 31/05/2013

Research Stage at the Space Propulsion Laboratory, Aero/Astro Department, Massachusetts Institute of Technology, Cambridge, USA. Directed by Prof. Manuel Martinez-Sanchez.

- Development of novel models for the Study of Collisionless Electron cooling in magnetized plasma expansions.
- Experimental research on low power Hall Effect Thrusters with non conventional magnetic topologies.

01/02/2013 – 31/05/2013

Research stage at the Electric Propulsion and Plasma Dynamics Laboratory (EP-PDyL), Aerospace and Mechanical Engineering Department, Princeton University, New Jersey, USA. Directed by Prof. Edgar Choueiri and Dr. Justin Little.

- Experimental research on Helicon Plasma Thrusters.

Research & Development Projects

2013-2016

“Propulsión Espacial por Plasmas”, Research project of the National Research Program, Department of Economy and Competitiveness.

2013-15

“Helicon Plasma Thruster for Space Missions”. Partners: SENER Ingeniería y Sistemas S.A. & Universidad Carlos III de Madrid (UC3M). Funded by the European Space Agency (ESA), Contract 4000107292/12/NL/CO.

2011-2013

“Propulsión Espacial por Plasmas”, Research project of the National Research Program, AYA2010, Department of Economy and Competitiveness.

2012

“Plasma Detachment in Magnetic Nozzles”, funded by EOARD (grant FA8655-12-1-2043), USA.

Grants

01/04/2012 – 31/03/2015

Three years grant for doctoral studies: “Formación de Profesorado Universitario (FPU 2010, ECD/465/2012)” Department of Education, Culture and Sports, Government of Spain.

12/06/2013 – 8/09/2014

Research grant from the FPU program 2014, Department of Education, Culture and Sports, Government of Spain: *Research stage at the Electric Propulsion and Plasma Dynamics Laboratory (EPPDyL), Aerospace and Mechanical Engineering, Princeton University, New Jersey, USA.*

01/02/2013 – 31/05/2013

Research grant from the FPU program 2012, Department of Education, Culture and Sports, Government of Spain: *Research stage at the Space Propulsion Laboratory, Aero/Astro Department, Massachusetts Institute of Technology, Cambridge, USA.*

01/04/2011 – 31/03/2012

UPM grant co-funded by the European Commission in the 7th Framework Programme.

2005-2010

General grant for undergraduate studies. Department of Education, Government of Spain.

Publications & talks

JOURNAL ARTICLES

Manuel Martinez-Sanchez, Jaume Navarro-Cavallé, and Eduardo Ahedo, ‘Electron cooling and finite potential drop in a magnetized plasma expansion’, *Phys. Plasmas* 22, 053501 (2015); doi: 10.1063/1.4919627.

Eduardo Ahedo and Jaume Navarro-Cavallé, ‘Helicon thruster plasma modeling: Two-dimensional fluid-dynamics and propulsive performances’, *Phys. Plasmas* 20, 043512 (2013); doi: 10.1063/1.4798409.

CONFERENCE TALKS

B. Tian, E. Ahedo, and J. Navarro-Cavallé, ‘Analysis of plasma impedance in helicon antenna thrusters’, in the 34th International Electric Propulsion Conference, IEPC-2015-326, Kobe, Japan, July 4-10, 2015. Electric Rocket Society. (Talk-paper)

J. Navarro-Cavallé, S. Correyero and E. Ahedo, ‘Collisionless electron cooling on magnetized plasma expansions: advances on modelling’, in the 34th International

Electric Propulsion Conference, IEPC-2015-117, Kobe, Japan, July 4-10, 2015. Electric Rocket Society. (Talk-paper)

Mario Merino, Jaume Navarro Cavallé, Santiago Casado, Eduardo Ahedo, Victor Gómez, Mercedes Ruiz, Eduard Bosch, and José González del Amo, 'Design and development of a 1kW-class helicon antenna thruster', in the 34th International Electric Propulsion Conference, IEPC-2015-297, Kobe, Japan, July 4-10, 2015. Electric Rocket Society. (Talk-paper)

B. Tian, E. Ahedo and J. Navarro-Cavallé, 'Investigation of Plasma-wave Interaction in Helicon Antenna Thrusters', AIAA 2014-3475, 50th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit (JPC), 28-30 July 2014, Cleveland, OH, USA. eISBN: 978-1-62410-303-2, DOI: 10.2514/MJPC14 (Talk-paper).

J. Navarro-Cavallé, M. Merino, E. Ahedo, V. Sánchez and M. Ruiz, 'Design of Helicon Plasma Thruster subsystems', AIAA 2014-3699, 50th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit (JPC), 28-30 July 2014, Cleveland, OH, USA. eISBN: 978-1-62410-303-2, DOI: 10.2514/MJPC14 (Talk-paper).

J. Navarro-Cavallé, M. Martínez-Sánchez and E. Ahedo, 'Collisionless electron cooling in a magnetic nozzle', AIAA 2014-4028, 50th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit (JPC), 28-30 July 2014, Cleveland, OH, USA. eISBN: 978-1-62410-303-2, DOI: 10.2514/MJPC14 (Talk-paper).

J. Navarro, M. Merino, E. Ahedo, V. Gómez, M. Ruiz, and J.A. Gonzalez del Amo, 'Helicon Plasma Thrusters: prototypes and advances on modeling', IEPC-2013-285, 33rd International Electric Propulsion Conference 2013, Washington DC, USA, October 6-10, 2013 (Talk), Electric Rocket Society.

M. Ruiz, I. Urdampilleta, J.M. del Cura, E. Ahedo and J. Navarro, 'Space Mission potentiality benefit or enabled by the prospective use of Helicon Plasma Thrusters', IEPC-2013-273, 33rd International Electric Propulsion Conference 2013, Washington DC, USA, October 6-10, 2013. (Talk), Electric Rocket Society.

J. Navarro, 'The Helicon Plasma Thruster: prototypes and modelling status' International Conference on Phenomena in Ionized Gases (ICPIG), 14-19 July, 2013, Granada (Spain). (Invited Talk in Special Session 1: Plasma Space Propulsion)

J. Navarro, M. Merino, E. Ahedo, 'A fluiddynamic performance model of a helicon thruster', AIAA 2012-3955, 48th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit (JPC), 29 July – 1 August 2012, Atlanta, GE, USA. eISBN: 978-1-60086-935-8, DOI: 10.2514/MJPC12 (Talk-paper).

J. Navarro, M. Merino, E. Ahedo, 'Two-Fluid and hybrid-PIC code comparison of the plasma plume in a magnetic nozzle', AIAA 2012-3840, 48th AIAA/ASME/SAE/ASEE Joint Propulsion Conference and Exhibit (JPC), 29 July – 1 August 2012, Atlanta, GE, USA. eISBN: 978-1-60086-935-8, DOI: 10.2514/MJPC12 (Talk-paper).

J. Navarro, E. Ahedo, 'Hybrid model simulation of a plasma plume in a magnetic nozzle', IEPC-2011-048 (2011). 32nd International Electric Propulsion Conference 2011, Wiesbaden, Germany September 11-15, 2011. Electric Rocket Society. (Talk-paper)

J. Navarro, M. Merino, E. Ahedo, 'Plasma Structure inside and outside a helicon thruster', 39th IEEE International Conference On Plasma Science ICOPS, Edinburgh, UK, July 8-12, 2012. (Poster Session).

UNDERGRADUATE, MASTER & PHD THESES

2014-15

Advisor and co-director of Master Thesis: "Enfriamiento electrónico no colisional en toberas magnéticas" by Sara Correyero Plaza, Ingeniería Aeronáutica, Universidad Politécnica de Madrid. Translation: "Collisionless electron cooling in Magnetic Nozzles".

Other skills

LANGUAGES

- Fluent in English, Catalan and Spanish
- German, A1.2 level, Universitat Oberta de Catalunya (UOC), 2011.

EXTRA-ACADEMIC EDUCATION

8-9/03/12

"Spacecraft plasma interaction software" (SPIS, 2012 SPINE Winter School).

February 2009

"CATIA design - 60 hours course" at the Universidad Politécnica de Catalunya.

PROGRAMMING LANGUAGES AND ENGINEERING SOFTWARE

- C/C++, Fortran
- MATLAB & SIMULINK.
- LabView

- Visual Basic
- STK.
- TECPLOT.
- GH. BLADED. (Wind turbine aeroelastic simulations) Advanced level.
- SOLIDEDGE, CATIA.