

CARLOS D. MORA MORENO

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Delivering new technologies in benefit of the society is my passion.

My experience as a researcher in industry and academia has prepared me to react to the technological challenges facing the digital age. I manage a project focusing on the development of predictive models to better understand and improve a sustainable energy solution.

My most recent results explain a decade-long problem about geometric constraints.

Values: Curiosity, transcendence, innovation, pursue of excellence, responsibility, confidence, team spirit

Competencies: Analytical mind, attention to detail, leadership, proactivity, persistency, reliability, multiculturality

Technical skills: Mathematical modelling, data management and analysis using computational tools, ability to perform lab experiments, creative approach to problem solving, fast learner in changing environments, troubleshoot of complex problems both in a team or on my own, excellent oral and written communication skills

EXPERIENCE

2017 - present **Ph.D. Researcher at** [Eindhoven University of Technology](#)

- **Main project:** Development of mathematical models to predict and reduce heat transport in fusion plasma reactors
- **Skills / duties:**
 - Perform 5-D numerical simulations in high performance computers
 - Program data analysis routines using modern languages
 - 'Big data' approach for analysis of terabytes of turbulence simulations
 - Build models, then test and validate their performance
 - Manage multi-national collaborative tasks
 - Prepare novel scientific publications
 - Write research proposals and reports
 - Deliver engaging presentations
 - Teaching and student supervision

2017 **Research Associate at** [UK Atomic Energy Authority](#)

- **Main project:** Develop experimental scenarios to test the capabilities of a new magnetic coil configuration of a fusion plasma reactor
- **Skills / duties:**
 - Solve 2-D magnetic equilibrium equations using a dedicated MATLAB package
 - Calculate magnetic coil interaction matrices
 - Devise the transitions between magnetic equilibria
 - Determine the viability of experimental scenarios
- Experiments ran successfully during device commissioning

2015 - 2016

Diagnostics Engineer at TAE technologies and spin-off Plasmatech

- **Main project:** Characterisation of impurity losses in a linear plasma device using Doppler spectroscopy
- **Skills / duties:**
 - Hands-on maintenance of experimental setup
 - Development of data acquisition routines
 - Support to lead scientists during experimental campaigns
 - Involvement in discussion of physical results
 - Experience in a multi-physics, engineering and industrial environment
- Bachelor’s thesis written on this topic

EDUCATION

2017 - present
(est. May 2022)

Ph.D. in Applied Physics

Eindhoven University of Technology · Max Planck Institute for Plasma Physics

- Specialisation in Science and Technology of Nuclear Fusion
- Joint project in collaboration with the institute home the most advanced device of its type: Wendelstein 7-X
- Soft-skills training followed: Public Speaking, Scientific Integrity, Project Managing, Writing Workshops and Student Supervision

2016 - 2017

Master of Science (with distinction) in Fusion Energy

University of York · UK Atomic Energy Authority

- Specialisation program to address the current energy demand with an innovative solution: Nuclear Fusion
- Focus on theoretical plasma physics and HPC computing
- One-year program with focus on research experience
- Awarded a scholarship from the Mexican Science and Technology Council

2014

International exchange experience

Universitat Autònoma de Barcelona

- Six months exchange program
- Courses followed:
 - Particle Physics, Business Organisation and Management, Entrepreneurship

2009 - 2012

Bachelor of Engineering Physics

Universidad Autónoma Metropolitana - Azcapotzalco

- Assistant at the local plasma laboratory
- International exchange scholarship
- End-project scholarship

SKILLS

Languages	Spanish	★★★★★
	English	★★★★★
	Italian	★★★★☆
	Dutch	★★★★☆

Computer

- **Linux** · Preferred operating system (Suse)
- **Vim** · Preferred editor
- **LaTeX** · Publication-quality documents
- **Bash, Make, ...** · Daily scripting and development
- **Git** · For version control of virtually everything
- **html, CSS** · Used for this curriculum vitae (with markdown → Pandoc)
- **Microsoft Office** · Where useful

Programming

- **Python** · Numpy, scipy, pandas, matplotlib, dask, cython
- **Jupyter** · Lab and notebooks. Used for daily data analysis
- **MATLAB** · Data analysis, powerful toolset with full workflow experience
- **Mathematica** · Used for symbolic computing
- **SLURM** · Job manager used for cluster computing
- **C++** · Limited experience, used for side projects
- **Fortran** · HPC applications such as **GENE**
- **Bash, Make** · Experience with linux scripting and development
- **MPI, OpenMP** · Used for parallelisation for HPC

PERSONAL

Nationality: Mexican
Visa status: Researcher under the Directive (EU) 2016/801
Date of birth: 20 September 1990

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