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

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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	★★★½☆

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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