CARLOS D. MORA MORENO

DEVENTER, THE NETHERLANDS · +31 (0) 618 94 77 97
CD@MORAMORENO.COM

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:	Reliability, transcendence, innovation and pursuit of excellence, responsibility, respect, personal development
Competencies:	Analytical mind, attention to detail, leadership, proactivity, persistency, reliability, multiculturality

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Nationality:	Mexican
Date of birth:	20/09/1990

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

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