Francisco José Palmero Moya

Mathematical Physicist & Scientific Programmer Working at TU Delft

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I am a mathematical physicist with a master's in Research in Artificial Intelligence. Since May 2023, I have been working as a Scientific Programmer at the Nynke Dekker Lab in TU Delft, where we focus on understanding the DNA replication process of different biological systems.
I obtained my B.Sc. in Physics at the University of Córdoba (Spain) in 2022 studying the mathematical formalism of spinors. I also complement these studies with a B.Sc. in Mathematics with a strong focus on subjects closely related to physics. I recently completed a M.Sc. in Research in Artificial Intelligence and collaborated as a research assistant where we focused on stellar dating using Bayesian hierarchical models.
I have a broad interdisciplinary set of interests, including Lie groups theory, spinors, evolutionary computing, quantum programming, and emergent phenomena. I consider myself a curious and proactive person. I am an eager reader of philosophy and literature in my free time.

Education

- **Master of Science in Research in Artificial Intelligence** — Online
  National University of Distance Learning; GPA: 3.36 — *Oct 2022 - Sep 2023*
- **Bachelor of Science in Physics** — Córdoba, Spain
  University of Córdoba; GPA: 3.16 — *Sep 2017 - Jul 2022*
- **Bachelor of Science in Mathematics** — Online
  National University of Distance Learning; GPA: 3.00 — *Oct 2018 - present*

Experience

- **Technische Universiteit Delft** — Delft, Netherlands
  Scientific Programmer & Data Analyst - Nynke Dekker Lab — *May 2023 - present*
  - **Research in Biophysics**: Our lab focuses on understanding DNA replication using state-of-the-art biophysics.
    - Lead the development of microscopy data aqcuisition and analysis software.
    - Provide data analysis support to students and researchers with diverse backgrounds.
    - (Co-)author publications with other researchers.
- **National University of Distance Learning** — Remote
  Researcher - Dr. L. M. Sarro & Dr. J. Olivares — *Sep 2022 - Sep 2023*
  - **Research Collaboration Fellow**: Our aim is to define and implement a Bayesian hierarchical model able to determine the ages of star clusters and associations through two age dating techniques: isochrones and Lithium abundance.
    - Bayesian inference and Hamiltonian Monte Carlo.
    - Astrophysics of stellar evolution.
    - Publishing results as first author.
- **University of Córdoba** — Córdoba, Spain
  Research Assistant - Dr. Rafael M. Rubio & Dr. Magdalena Caballero — *Sep 2021 - Jun 2022*
  - **Research Collaboration Fellow**: Researched on mathematical foundations of spinors (particles with semi-integer spin), namely Lie Groups and its representations, within the Mathematics Department of the University of Córdoba.

Languages

- **Spanish**: Mother tongue
- **English**: Full professional proeficiency
- **German**: Professional working proeficiency

Programming Skills Summary

- **Languages**: Python, R, SQL, Latex, Fortran
- **Tools**: TensorFlow, PyMC, Scikit-learn, OpenCV, Matplotlib, MATLAB, ggplot2, Tableau, Excel

Academic Exchanges

- **University of Granada** — Granada, Spain
  Physics — *Sep 2020 - Jun 2021*
  - **SICUE**: I had the chance to attend lectures on topics like:
    - Quantum Field Theory, General Relativity, and Quantum Information Theory.
- **University of Leipzig** — Leipzig, Germany
  Physics — *Oct 2019 - Jul 2020*
  - **Erasmus+**: I could boost my social managing skills with people from different countries. I attended lectures on:
    - Statistical Physics, Solid State Physics, and Mathematical Physics

Publications

[1] **Francisco J. Palmero Moya**, J. Olivares, and L.M. Sarro. Bayesian Inference of open cluster ages from photometry, parallaxes and Lithium measurements. *Astronomy & Astrophysics*, submitted(2023)

[2] Zhaowei Liu*, Edo van Veen*, Humberto Sánchez, Belén Solano, **Francisco J. Palmero Moya**, Kaley A. McCluskey, Daniel Ramírez Montero, Theo van Laar, and Nynke H. Dekker. A biophysics toolbox for reliable data acquisition and processing in integrated force-confocal fluorescence microscopy. *ACS Photonics*, submitted(2023)
(= equal contribution)*

Honors and Awards

- I have been awarded an academic exchange grant by the University of Córdoba as top best student in Science Faculty within SICUE exchange program. (2020)