JAVIER CHICO VÁZQUEZ

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EDUCATION

Massachusetts Institute of Technology **Cambridge, MA** | ***2021 - 2022***

- Exchange year at MIT. Relevant classes: Fluid Dynamics, Quantum Computing, Aerodynamics, Classical Mechanics III, Non Linear Dynamics & Waves, Continuum Systems, Advanced PDEs. **5.0 GPA**
- Undergraduate Research (**UROP**): on spectral density approximations for large matrices, with Dr. Horning.

Imperial College London **London** | ***2019 - 2023 (Expected)***

- **MSci** in Mathematics Grades (%): Y3 **92.5** Y2 **90.73** Y1 **89.12** Expected: **First Class**
- **Master Thesis** with Prof. Papageorgiou on ferrofluids.
- **Dean's list** in Y1,Y2,Y3. G-RESEARCH **academic excellence** prize. Selected for the MIT exchange.
- **Second Year Research project** on Stochastic Geometric mechanics with Prof. Darryl Holm.
- Stochastic Differential Equations, Asymptotic methods, Applied Complex Analysis, PDEs, Numerical Analysis, Network Science. In the future: Vortex Dynamics, Hydrodynamics Stability.

IES Ramiro de Maeztu **Madrid** | ***2016 - 2018***

- International Baccalaureate (IB) and Spanish Bahillerato. Scores: IB: 43/45
- Spanish Baccalaureate (Graduated with Honors): Score: 9.94/10
- Selectividad (EvAU, grade used to apply to Spanish universities) Score: 13.56/14

EXPERIENCE

Imperial College London, *Peer tutor* ***October 2022 - present***

- Peer tutor for two groups of first year students. Responsible for weekly meetings to help my tutees progress with problem sheets, extend their learning from lectures and prepare them for university examinations and the transition to university life.

Massachusetts Institute of Technology, *Undergraduate Researcher* ***2022***

- UROP with Dr Andrew Horning on Spectral Density Estimation and Kernel Polynomial Methods. Developed a new result for the convergence in distribution of random variables when transformed by Chebyshev polynomials.
- Summer research with Prof. Lydia Bourouiba on the Fluid Dynamics of Disease Transmission. Used network sciency to study the effect of topology in droplet drying and community structure in epidemic transmission.

Citigroup Global Markets Limited, *Summer Analyst & Spring Intern* **London** | ***Summer 2021***

- **CitiFX**: Quantitative Investor Solutions: Helped the desk pythonize processes, and quant research into what makes FX markets move. Project focused on using Covid Data to create FX trading signals.
- **Global Spread Products**: Automated data analysis tasks to predict default rates in securitized products.
- 2020 Citi Markets Spring Week (Virtual).

Kelele África (Non-profit), *Volunteer* **Uganda** | ***July 2019***

- Taught elementary Mathematics to children and Microsoft office to staff from Kumwenya EcoSchool, Uganda. Developed a workshop to inform about local snake species and procedures to follow in case of snake envenoming.
- Produced a collection of digital media intended to persuade local leaders of the importance of environmentally friendly practices and policies.

PROJECTS, AWARDS AND ACHIEVEMENTS

Most are available in my website: `https://javierchico.github.io`

- **Master Thesis** Ferrofluids on cylindrical domains with Prof. Papageorgiou.
- **Turing Grant** Awarded as part of my exchange year at MIT (£3858.57)
- **Madrid Academic Excellence Grant** awarded by the Madrid Education Board (2100 €). (2019)
- **G-RESEARCH prize for academic excellence** in Year 2 (2021).
- **Dean's list** in Y1, Y2 and Y3 awarded for academic excellence.
- **Year 2 Research:** *The 1:1:2 resonance and the stepwise precession of the swing plane*, supervised by Prof. D. Holm. Developed a semi-empirical formula for the precession angle and studied the effects of including stochasticity into the classical problem of the elastic spherical pendulum.
- **Mathematics of Pelotons** As part of MIT's 18.355 Fluid Dynamics by Prof. Bush I research the aerodynamics of groups of cyclists, and studied their optimal shape, and the optimal position within the peloton.
- **Year 1 Research:** *Applications of the Weierstrass Approximation Theorem and Bernstein Polynomials.* I explored different ways to approximate continuous functions on compact intervals, and quantified the error.
- **Olympiads** Bronze medallist in the 2018 Madrid Chemistry Olympiad, participant in the National Olympiad.
- **ICDSS Insurance Pricing Competition 2020** Second prize in the nonlinear model category (2020). I used generalised linear models to build a predictive model from data from 80000 real drivers.
- **Aerodynamics II:** As part of MIT's 16.100's I designed a subsonic electric aircraft using high performance CFD software.
- **Aerodynamics I:** As part of my International Baccalaureate extended essay I developed a simple mathematical model which describes the lift produced by an aerofoil as a function of several variables such as speed, angle of attack and angle of the flaps. I designed a 3D model which was 3D printed and tested in a small wind to obtain empirical results. Computer simulations using commercial CFD were also produced to contrast the experimental findings.

SKILLS AND INTERESTS

Languages Bilingual in Spanish and English.

C1 Advanced (English) Grade: A; Average Score: 209

Technical skills

- Advanced: `Python`, `MatLab`, `Excel`, `LaTex` & `R`.
- Intermediate: `Julia`, `Mathematica`.

Python Libraries:

- Advanced: Numpy, Pandas, Scipy, Sympy, NetworkX,Tensorflow and sklearn.
- Intermediate in Selenium.

Memberships:

- Member of IMA (Institute of Mathematics and its Applications).
- Member of Imperial College SIAM student chapter.

Interests

- Triathlon (runner up in the 2015 regional team championship), trail running and cycling (completed *La Perico Delgado* (164 km, 3000 m elevation) (2019)).
- MathSoc Committee member (Social Events secretary)