

Elvis Aguero

PhD. Candidate in Engineering

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Education

- 2024- **PhD, Fluids and Thermal Sciences**, Brown University, Providence, RI. **Brown Diversity Fellow.**
- 2020-2024 **B.Sc., Engineering Physics**, Universidade Federal da Integração Latino-Americana (UNILA), Foz do Iguaçu, Brazil. GPA: 3.8/4.0. Summa cum Laude.
- 2017-2019 **M. Sc., Applied Maths**, Instituto de Matemática Pura e Aplicada, Rio de Janeiro, Brazil. GPA: 3.6/4.0. Advisor: André Nachbin

Publications & Technical Work

- 2025 E. A. Agüero, C. A. Galeano-Rios, C. T. Gabbard, C. Ragazzo, D. M. Harris, and P. A. Milewski. *Droplet rebounds off a fluid bath: kinematic match simulations and experiments.* Arxiv preprint under review. [arXiv:2509.22826v1](https://arxiv.org/abs/2509.22826v1)
- 2025 C. T. Gabbard, E. A. Agüero, R. Cimpeanu, K. Kuehr, E. Silver, J.-W. Barotta, C. A. Galeano-Rios, and D. M. Harris. *Drop rebound at low Weber number.* Journal of Fluid Mechanics, vol. 1019, A25. DOI:10.1017/jfm.2025.10589
- 2022 E. A. Agüero, L. Alventosa, D. M. Harris, and C. A. Galeano-Rios. *Impact of a rigid sphere onto an elastic membrane.* Proceedings of the Royal Society A. DOI:10.1098/rspa.2022.0340

Experience

- 2017-2024 **Olympiad Organizer and Trainer**, OMAPA, Asunción, Paraguay (Remote).
- Author of more than 200 math problems for the Paraguayan National Math Olympiad, as well as international math competitions.
 - Instructor for the Young Talents Program, where the best students from the National Olympiad receive mathematical and scientific training for international competitions.
- 2024 **Summer Intern**, CERN, Geneva, Switzerland .
- Worked in the department of software for experimental physics at CERN (EP-SFT), where we used Julia to leverage open-source, large-scale workflows to enable postprocessing to run at scale.
- 2023 **Scanning Electron Microscope Lab Assistant**, UNILA, Foz do Iguaçu, Brazil .
- Provided administrative assistance and prepared samples for material characterization for the Scanning Electron Microscope under the guidance of Prof. Rodrigo Basso
- 2020-2023 **Academic Consultant**, Piensa Paraguay, Ciudad del Este, Paraguay .
- Designed the math curriculum and devised the structure and maintenance of a database with more than 1000 math problems in MongoDB. Piensa is a local startup which offers math, robotics and programming courses for students aged 7 – 17.
- 2019 **Project Intern**, Parque Tecnológico Itaipu, Hernandarias, Paraguay .
- Implemented a support vector machine algorithm in MATLAB for classification of faulty high-voltage circuit breakers.

Fellowships and Awards

- 2024 Diversity Fellow at Brown University.
- 2017 CNPQ Fellowship for M.Sc. Studies at IMPA.
- 2017 **Prize "Domingo Martínez de Irala"**: Order of merit Medal, Asunción, Paraguay.
- 2015, 2016 **International Math Olympiad**: Bronze Medals (2015, 2016).
- 2015, 2016 **IberoAmerican Math Olympiad**: Honorific Mention (2015), Bronze Medal (2016).
- 2011-2016 **Paraguayan Math Olympiad**: Gold Medals (2013, 2015, 2016) and Silver Medals (2011, 2012, 2014).
- 2016 **Distinguished Citizen of Ciudad del Este Medal**.

Talks

- 2025 Nov *Wave-driven propulsion of a flexible raft.* Contributed talk, **APS DFD (78th Annual Meeting)**, Houston, Texas, USA.
- 2024 Nov *Rebound of a droplet impacting a non-wetting rigid surface.* Contributed talk, **APS DFD (77th Annual Meeting)**, Salt Lake City, Utah, USA.
- 2023 Jul *Impact of a rigid sphere onto an elastic membrane.* Contributed talk, **Brazil–China Joint Mathematical Meeting**, Foz do Iguaçu, Brazil. [Program](#)
- 2021 Dec *Modelado de impacto axisimétrico de un sólido sobre una membrana elástica.* Talk, **4to Ciclo de Charlas Científicas “Creando Redes”**, online, Paraguay. [Video](#)
- 2021 Nov *Modelado de impacto axisimétrico de un sólido sobre una membrana elástica.* Talk, **CPMyCA — Coloquio Paraguayo de Matemática y Ciencias Afines**, Paraguay.

Teaching

- Fall 2025 Teaching Assistant, **Data-Driven Design & Analysis of Structures & Materials**, Brown University. [Course Website](#)
- Summer 2025 Teaching Assistant, **Soft Matter Physics**, Brown University Pre-College Program.
- 2017-2024 Instructor, Young Talents Program, OMAPA. [Videos](#).
- Fall 2022 Teaching Assistant, **Physics II**, UNILA, Foz do Iguaçu, Brazil.
- Fall 2021 Teaching Assistant, **Numerical Calculus**, UNILA, Foz do Iguaçu, Brazil.
- Summer 2019 Teaching Assistant, **Functional Analysis (Summer School)**, IMPA, Rio de Janeiro, Brazil.

Workshops and Summer Schools

- 2025 Participant, **Summer School on Soft Matter Physics**. Topics included: Control Theory in Physics, Physics of Biofilms, Instability, Flocking and Self-assembly.
- 2024 Participant, **7th Summer School in Advanced Experimental Physics**, CBPF, Rio de Janeiro, Brazil (acceptance rate $\approx 15\%$). Hands-on modules included ferromagnetic resonance, magnetron sputtering, and X-ray reflectivity to study thin-film bilayers.

Programming & Technical Skills

Experienced

- Julia: Scientific Computing, OOP.
- MATLAB: Scientific Computing, OOP, Parallel computing, GPU-accelerated algorithms.
- Python: Scientific Computing, OOP, and ML programming with Pytorch/JAX.
- Git, Github, bash: Remote and local version control, contributed to a number of open-source projects.

Familiar

- C++: OOP, Basic Scientific Computing.
- Java, JS, Google Apps Script, SQL, MongoDB, Google Sheets, Access, LabView, R, HTML, Scilab.

Volunteer Work and Outreach

- 2017- Present **Math Olympiads Coordinator, Jury member, Team Leader, OMAPA.**
- Part of the Paraguayan delegation as organizer in numerous International Olympiads, such as the Cyberspace Mathematical Competition (2020), IberoAmerican Olympiad (2021), and the International Mathematical Olympiad (2022), which was held in Oslo, Norway.
 - Part of the jury committee at the XXXII Cono Sur Olympiad (2021), organized by Paraguay. Graded problems of all countries, and created problems for the contest.
- 2022-2023 **Engineering Physics Student Council, UNILA.**
- 2019-2022 **Board member, Teaching Staff, Mathura.**
- Board member of Mathura, an NGO which gives free Maths and Spanish classes to underserved high school students in their pursuit to undergraduate studies. Also, part of the math teaching staff of Mathura.

2019-2021 **Volunteer Data Analyst, ReAcción Paraguay.**

- ReAcción is a non-profit NGO that uses civic education and grassroots mobilization to demand accountability from government in the education sector.
- Used Python and Apps Script to analyze thousand of public contracts, comparing public expenditure of central and local institutions before and after the covid-19 outbreak. A couple of articles (in Spanish) were made based on our findings: <https://reaccion.org.py/publicaciones/#investigaciones>
- Gave seminars to the public to raise awareness on the importance of open data, and worked on a project to automate the process of contract data analysis in our country.

Languages

Spanish CEFR C2

English CEFR C1

Portuguese CEFR C2

French CEFR A1

Other Activities

- Problem solving: My [ProjectEuler](#) account is percentile 0.4% among all problem solvers.
- When I'm not solving problems, I am usually playing some chess on [Lichess!](#).
- When I'm not playing chess, I am usually running or playing football.