

Javier Alejandro Acevedo Barroso

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Personal information

Born in Bucaramanga, Colombia, on January 4th, 1997. Citizenship: Colombian.

Interest areas

- Machine learning and artificial intelligence
- Time series prediction and classification.
- Machine Learning in astronomy.
- Predictive models.
- Data visualization.
- Data-driven decision making.
- Data mining.
- Numerical simulations.
- Dark matter.

Education

2015-2019 UNDERGRADUATE PHYSICS STUDIES

Institution: Departamento de Física, Universidad de los Andes. *Dissertation:* Simulating a collisional dark matter fluid using a Lattice-Boltzmann method. *Advisor:* Dr. Jaime Forero.

2019-2020 MASTER IN SCIENCES-PHYSICS

Institution: Departamento de Física, Universidad de los Andes. *Dissertation:* Searching for extragalactic variable stars using Machine Learning algorithms. *Advisor:* Dr. Alejandro García.

Participation in events

2019 MOCa 2019: Dark Matter in Colombia (Materia Oscura en Colombia).

Institution: Departamento de Física, Universidad de los Andes. *Talk:* Simulating collisional dark matter.

2019 COCOA 2019 Medellín: VI Colombian Congress of Astronomy and Astrophysics (VI Congreso Colombiano de Astronomía y Astrofísica).

Organizers: Universidad de Antioquia, Parque Explora – Planetario de Medellín, Instituto Tecnológico Metropolitano ITM y Sociedad Antioqueña de Astronomía SAA. *Talk:* Simulating Collisional Dark Matter (Simulando materia oscura colisional).

- 2018 Uniandes School of Astronomy 2018 (Escuela de Astronomía Uniandes 2018).
Institution: Departamento de Física, Universidad de los Andes.
- 2018 MOCa 2018: Dark Matter in Colombia (Materia Oscura en Colombia).
Institution: Departamento de Física, Universidad de los Andes. *Talk:* Simulating Collisional Dark Matter.

Research activities

- 2019-ongoing Gravitational lens modeling using the 2.2-m ESO/MPG to measure H_0 (H0LICOW)
Institution: Departamento de Física, Universidad de los Andes. *Director:* Dr. Alejandro García and Dr. Frédéric Courbin.
- 2019-2020 Search for extragalactic variable stars using Machine Learning algorithms.
Institution: Departamento de Física, Universidad de los Andes. *Advisor:* Dr. Alejandro García.
- 2019 Measurement of the rotation velocity of type B and A stars (Medición de la velocidad de rotación de estrellas tipo B y A).
Institution: Departamento de Física, Universidad de los Andes. *Advisor:* Dr. Alejandro García.
- 2018-2020 Simulating collisional dark matter using a lattice Boltzmann method.
Institución: Departamento de Física, Universidad de los Andes. *Advisor:* Dr. Jaime Forero.

Teaching experience

- 2019-2020 Teaching assistant, Experimental physics I.
Institution: Departamento de Física, Universidad de los Andes.
- 2019-2020 Teaching assistant, Experimental physics II.
Institution: Departamento de Física, Universidad de los Andes.

Other works and Courses

- 2019 Design of the book "Las Bolsas de Basura" by Enrique Winter.
Editorial house: Escarabajo editorial.
- 2020 Data-Driven Astronomy. Coursera: The University of Sydney.
- 2020 Support Vector Machines with scikit-learn Coursera: Coursera Project Network.

Awards and scholarships

- 2019 Recognizance to best results. "Prueba Saber Pro 2018". Given by the Colombian Ministry of Education.
- 2019 Teaching assistant with full scholarship for master studies in physics, given by Universidad de los Andes.
- 2014 Full scholarship for undergraduate studies "Bachilleres por Colombia, Programa Mario Galán Gómez", given by Ecopetrol.
- 2013 Best student from the department of Santander. "Prueba Saber 11 2013". Given by the Colombian Ministry of Education.

Professional Abilities

- Teamwork.

- Very high problem solving skills.
- Creative.
- Advanced knowledge of mathematics and physics.
- Advanced knowledge of Statistics (including Bayesian) and artificial intelligence.
- Attention to detail.
- High capacity to work under pressure.
- Languages: Spanish (native), English (C1) and German (A1).
- Advanced use of Linux.
- Very fast and good learner.
- Design of articles and books in \LaTeX .
- Programming languages: Python, Bash, R, Julia, C/C++, Java.
- SQL: SQLite, PySQL, MySQL.
- Machine learning models.
- Neural networks in Pytorch, Tensorflow, Keras and Flux.
- Montecarlo methods.
- MPI and OpenMP.
- SSH and associated protocols.
- Use of telescope, spectroscope and optical equipment.
- Reduction and analysis of CCD images.
- Data visualization (Dash, Seaborn, Matplotlib, Gnuplot).
- Symbolic algebra with Maxima and Sympy.
- Basic electronic and Arduino.
- Design and implementation of computer simulations and numerical methods.
- Additional software: Awk, Anaconda, IRAF, Git, Make, Pandas, Numpy, Scikit-learn, Optuna, Spyder, Jupyter, Vim.

References

- Dr. Jose Alejandro Garcia Varela
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Email: josegarc@uniandes.edu.co
- Dr. Jaime Ernesto Forero Romero
Departamento de Física Universidad de los Andes.
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- Dr. Beatriz Eugenia Sabogal Martinez
Profesora Departamento de Física Universidad de los Andes.
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