Javier Alejandro Acevedo Barroso

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Personal information

Born in Bucaramanga, Colombia, on January 4$^{\text{th}}$, 1997 (24 years).

Interest areas

- Machine learning and artificial intelligence
- Time series prediction and classification.
- Machine Learning in astronomy.
- Predictive models.
- Data visualization.
- 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
  Departamento de Física Universidad de los Andes.
  Email: josegarc@uniandes.edu.co
- Dr. Jaime Ernesto Forero Romero
  Departamento de Física Universidad de los Andes.
  Email: je.forero@uniandes.edu.co
- Dr. Beatriz Eugenia Sabogal Martinez
  Profesora Departamento de Física Universidad de los Andes.
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