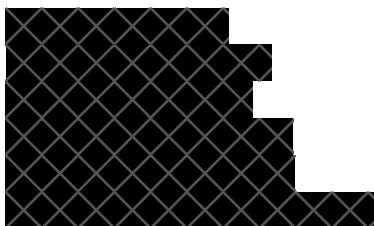# Jorge Andrés VILLA VÉLEZ



## DATA SCIENTIST

I am a scientist with five years of experience in **big data analysis** and leveraging simulations for **data-driven solutions**. I possess advanced **Python coding** skills and a strong background in **project management** at international and European levels. Additionally, I excel in **effectively communicating results** to different kinds of audiences. I am eager to apply my expertise and enhance my skills in other domains.

## PROFESSIONAL EXPERIENCE

### École Normale Supérieure de Paris (ENS) | Experienced researcher
JUNE 2022 - JUNE 2024, PARIS, FRANCE    |    Reference : Benjamin GODARD, Édith FALGARONE

- Developed a fitting method (Python) to analyze complex datasets, including numerical simulations, grids of models, data analysis, and data visualization.
- Attended international conferences to present my publications and work.
- Wrote scientific publications and academic reports.

OCTOBER 2018 - JUNE 2024, MOONS INTERNATIONAL COLLABORATION

- Member of the scientific and technical working groups for the European collaboration MOONS. Led production of mock data in international teams.
- Time series data analysis and instrument pipeline tests.

### RECA | Mentoring, advisory, and outreach committee
JUNE 2021 - JUNE 2024, COLOMBIA    |    Reference : Nicolás GARAVITO-CAMARGO

- Student advisory and mentor coordinator. Coached and guided groups of more than 50 participants. Planned activities and meetings.
- Conducted statistical analysis of demographic data (Astropy, JSON).
- Wrote reports and successful funding proposals for The Office of Astronomy for Development (OAD) of The International Astronomical Union (IAU).

### Laboratoire d'astrophysique de Marseille (LAM) | Researcher
OCTOBER 2018 - NOVEMBER 2021, MARSEILLE, FRANCE    |    Reference : Véronique BUAT, Françoise MAXANT

- Enhanced and optimized Bayesian fitting code to treat large sets of data from galaxies (Pandas, Seaborn, Astropy).
- Wrote scientific publications, and organized international conferences (100 participants) and weekly seminars (~50 participants).

### Universidad Autónoma de México | Internship
JUNE 2013 - AUGUST 2013,  ENSENADA, MEXICO

- Observational astronomy research project at the San Pedro Mártir Observatory.

### Universidad de Antioquia | Teaching assistant
JANUARY 2012 - JUNE 2016,  MEDELLIN, COLOMBIA

- Taught and advised courses: Astronomy for youngsters, Instrumentation Astronomy laboratory, and Physics of waves and oscillations.

## SKILLS

Soft: Project management, written and oral communication, leadership, teamwork, outreach, teaching
Technical: Data analysis, algorithm development, machine learning
Programming: Python: NumPy, SciPy, Matplotlib, Astropy, Pandas, Seaborn, Scikit-learn, Geopandas, Plotly, JSON, SQL, Bash
Data processing: Jupyter Notebooks
Text editing: Microsoft Office, LibreOffice, LaTeX, Kate
OS: Linux (Fedora, Ubuntu), macOS, Windows

## LANGUAGES

**Spanish**: Mother tongue  |  **English**: Fluent  |  **French**: Fluent

## EDUCATION

**Aix-Marseille Université |** Doctor in Astrophysics and Cosmology
NOVEMBER 2021, MARSEILLE, FRANCE

**Universiteit Leiden**  | Master in Science Astronomy: Research
AUGUST 2018, LEIDEN, THE NETHERLANDS

**Universidad de Antioquia**  | Bachelor in science: Astronomy
APRIL 2015,  MEDELLIN, COLOMBIA

## SCIENTIFIC PUBLICATIONS

- 2024 - **Radiative and mechanical energies in galaxies: I. Contributions of molecular shocks and PDRs in 3C 326 N**, **J.A. Villa Vélez**, B. Godard, P. Guillard and G. Pineau des Forêts, A&A, 2024
- 2023 - **RECA: Mentoring, internship, and educational programs as tools to overcome inequalities for Astronomy students in Colombia**, N. Ospina et al. incl. **J.A. Villa Vélez**, Highlights on Spanish Astrophysics XI, Proceedings of the XV Scientific Meeting of the Spanish Astronomical Society
- 2021 - **Fitting spectral energy distributions of FMOS-COSMOS emission-line galaxies at z ~ 1.6: Star formation rates, dust attenuation, and [OIII]λ5007 emission-line luminosities**, **J.A. Villa Vélez**, Véronique Buat, Patrice Theulé, Médéric Boquien & Denis Burgarella; A&A, 2021, Vol. 654, A153
- 2020 - **A Virgo Environmental Survey Tracing Ionised Gas Emission. VESTIGE VIII. Bridging the cluster-ICM-galaxy evolution at small scales**, A. Longobardi, A. Boselli, M. Fossati, **J.A. Villa Vélez**, S. Bianchi, V. Casasola, E. Sarpa, F. Combes, G. Hensler, D. Burgarella, C. Schimd, A. Nanni, P. Côté, V. Buat, P. Amram, L. Ferrarese, J. Braine, G. Trinchieri, S. Boissier, M. Boquien, P. Andreani, S. Gwyn, J. C. Cuillandre; A&A, 2020, Vol. 644, A161
- 2019 - **COSMOS/GOODS-S fields spectro-photometric analysis and the MOONS future perspectives in SED fitting studies**, **J.A. Villa Vélez,**  V. Buat,  D.Burgarella, M. Rodrigues, M. Puech, H. Flores; Proceedings of the Annual meeting of the French Society of Astronomy and Astrophysics, 2019, pp.115-119
- 2018 - **The Pre-main Sequence Population of Sco-Cen Unveiled with Gaia DR2**; **J.A. Villa Vélez**, Brown A. G. A., and M. A. Kenworthy, RN AAS, 2018, Volume 2, Number 2

## HONORS & AWARDS

### Scholarship
2016-2018: Awarded the Oort Scholarship of the Sterrewacht Leiden, Leiden University, for master studies.

### Honors
2015: Best physics department graduated GPA

2009-2014: Honored with the "Best Astronomy term GPA" and "Best Astronomy Advanced Student"

**Communicating science**
Special guest at multiple conferences, activities, and podcasts at the international level.

## SOCIETAL IMPACT & COMMUNITY BUILDING

### RECA

- Mentoring of several students (~10) at bachelor and master level.
- Students accepted to do internships and pursue master's and doctoral studies at the international level.
- Brought science to rural regions in Colombia to empower school and high-school students.

### Skype A Scientist

- Brought astronomy to school and high school levels as a way to show students that we all can be scientists.
- Outreach activities in English, Spanish, and French in several Latin American countries, USA and France.