

Daniela Galárraga-Espinosa

Curriculum Vitae

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Nationality: Ecuadorian

Education

- 2018–2021 **PhD. in Astronomy & Astrophysics**, *Université Paris-Saclay, Orsay-France*.
Title: *Characterising Cosmic filaments and their surroundings in large-scale hydro-dynamical simulations*.
Supervised by Prof. Nabila Aghanim and Prof. Mathieu Langer at the Institut d'Astrophysique Spatiale (IAS-Orsay).
- 2018 **M. Sc. in Cosmology and Particle Physics (NPAC)**, *Université Paris-Saclay, Orsay-France*.
Passed with honours
- 2018 **Magistère in Fundamental Physics**, *Université Paris-Saclay, Orsay-France*.
Passed with honours, ranking: 10th/91 students
- 2016 **Bachelor of Science in Fundamental Physics**, *Université Paris-Saclay, Orsay-France*.
Passed with honours
- 2013–2015 **Classe Préparatoire aux Grandes Ecoles**, *Lycée Bellevue, Toulouse-France*.
Intensive two-year program of fundamental sciences (classes PSCI and PC*).
- 2013 **Baccalaureate in Sciences**, *Lycée La Condamine, Quito-Ecuador*.
French and Ecuadorian high school degrees. 4th best graduate of the 2012/2013 promotion. Passed with honours - "Mention tres bien".

Past and Current research experiences

- Oct. 2021 – current **Independent postdoctoral research fellow**, *Max-Planck-Institut for Astrophysics, Garching-Germany*, advisor: Guinevere Kauffmann.
- April-June 2018 **CMB power spectrum with Internal Linear Combination method and error propagation**, *Internship at the Laboratoire d'Astroparticules et Cosmologie (APC), Paris-France*, supervisor: Dr. Ken Ganga.
- May-Aug. 2017 **Search for new physics in rare B decays**, *Internship at the NIKHEF institute, Amsterdam-The Netherlands*, supervisor: Prof. Robert Fleischer.
- June-July 2016 **Search for the Higgs boson in the $b\text{-}b\bar{b}$ channel of the ATLAS (CERN) experiment**, *Internship at the Laboratoire de Physique des Hautes Energies (LPNHE), Paris-France*, supervisor: Dr. Giovanni Calderini.

Awards & grants

- June 2023 **Camille Flammarion Prize**, (from SF2A and SAF, France) for excellence and societal impact of science outreach projects.
- Oct. 2021 **Max-Planck-Institute for Astrophysics fellowship**, Post-doctoral fellowship grant.
- May 2017 **IDEX Paris-Saclay international mobility grant**. This grant funded my 3 month visit to the NIKHEF institute in the Netherlands.
- Feb. 2017 **French Physicist's Tournament 2017**, *Paris-France*. Member of the team that represented the Paris-Sud University at the French national Physics contest. Ranking: 3rd/9 teams.
- 2013–2018 **Excellence-Major AEF grant**. Five-year full scholarship awarded by the French Ministry of Foreign Affairs.

Responsibilities

- Oct. 2023 – current **Supervisor** of Msc. Silvia Rueda Vargas on the gas content of small-scale filaments feeding central galaxies in the TNG50 simulation.
- Feb – July 2023 **Co-supervisor** of Msc. Victor Rufo on the production of synthetic observations for observations of high-z quasars.
- May 2022 **Co-organiser** of the one-day ORIGINS Excellence Cluster workshop 'Gas flows around galaxies' at the Max-Planck-Institute for Astrophysics.
- 2022 **Co-organiser** of the weekly Galaxy Group Meeting at the Max-Planck-Institute for Astrophysics.

- June 2021 **Junior organiser** of the first edition of the QUantum Systems, Elementary Fields, Radiation, Cosmos & (Y)nteractions (QUERCY) workshop. *Le Bastif-France*
- 2018-2020 **PhD representative** for the Doctoral School of Astronomy and Astrophysics of Ile-de-France. Participation to the Doctoral School Council, PhD auditions, and jury.
- 2019-2020 Organiser of the monthly **PhD seminars** of IAS, '*Science & Breakfast*'.
- Nov. 2019 **Euclid France meeting**, part of the local organising committee at Paris-Saclay University.

Seminars & Conference presentations

Invited seminars & lectures [*non exhaustive selection*]

- 2023/08/01 **Lecture at the 'IX Escuela Ecuatoriana de Astronomia y Astrofisica'**, *Quito-Ecuador*.
Invited lecturer
- 2023/03/21 **Filaments: from the large-scale structure to the GCM**, *UC Berkeley, Berkeley, USA*.
Invited seminar
- 2023/03/20 **Filaments: from the large-scale structure to the GCM**, *UC Davis, Davis, USA*.
Invited seminar
- 2022/12/08 **Characterising cosmic filaments**, *Universitets-Sternwarte Munich (USM), Munich, Germany*.
Invited seminar
- 2022/08/26 **Lecture at the 'VIII Escuela Ecuatoriana de Astronomia y Astrofisica'**, *Quito-Ecuador*.
Invited lecturer
- 2022/06/21 **Characterising cosmic filaments using large hydro-dynamical simulations**, *Argelander institute for astronomy, Bonn-Germany*.
Invited institute seminar
- 2022/04/27 **Characterising cosmic filaments using large hydro-dynamical simulations**, *Max-Planck-Institute for Extraterrestrial Physics, Garching-Germany*.
Invited at the Galaxy Cluster group seminar
- 2021/12/06 **Characterising cosmic filaments using large hydro-dynamical simulations**, *MPA, Garching-Germany*.
Institute Seminar
- 2021/11/04 **Characterising cosmic filaments using hydro-dynamical simulations**, *IAP, Paris-France*.
Invited Seminar
- 2019/12/19 **Caracterización y propiedades de los filamentos cósmicos**, *EPN, Quito-Ecuador*.
Seminar at the Escuela Politécnica Nacional (EPN) and the Observatory of Quito.

Invited talks

- 2023/04/03 **Flows around galaxies: impact of galaxy connectivity of star-formation rate**, *Johns Hopkins University, Baltimore, USA*.
Talk at the astro-coffee
- 2023/03/31 **Flows around galaxies: impact of galaxy connectivity of star-formation rate**, *Flatiron Institute, New York, USA*.
Talk at galaxy group meeting
- 2023/02/22 **Filaments, filaments, filaments: from the large-scale structure to the GCM**, *UCSB, Santa Barbara, USA*.
Talk at UCSB Astro Lunch
- 2022/11/08 **Flows around galaxies I – The dependency of galaxy connectivity on cosmic environments and effects on the star-formation rate**, *DIPC, San Sebastian, Spain*.
Talk at journal club
- 2022/04/05 **The interplay between galaxies and cosmic filament properties**, *Ringberg Castle, Germany*.
Talk at 'Breakthroughs in Galaxy Formation' workshop
- 2021/01/20 **Gas properties in Cosmic Filaments**, *MPA, Garching-Germany*.
Talk at the Max Planck Institute of Astrophysics.
- 2020/12/01 **Gas properties in Cosmic Filaments**, *Leiden Observatory, Leiden-The Netherlands*.
Invited talk at the Leiden Observatory.
- 2020/11/13 **Properties of gas phases around cosmic filaments at $z = 0$ in the IllustrisTNG simulation**, *IFPU, Trieste, Italy*.
Talk at the remote journal club of the Cluster of Galaxies group of IFPU.
- 2020/06/11 **DisPerSE filament properties in numerical simulations**, *Tartu, Estonia*.
Talk at the remote workshop co-organised by the Tartu Observatory and IAS.

- 2020/05/07 **Populations of filaments from the galaxy distribution in simulations**, CEA, Saclay-France.
Invited talk at the Cosmo-Stat cosmology group.
- Contributed talks [*non exhaustive selection*]
- 2023/05/01 **Preliminary results on the evolution of cosmic filaments in MTNG**, Corsica-France.
Talk at the ByoPIC workshop
- 2023/02/27 **Filaments: from the large-scale structure to the GCM**, KITP Santa Barbara, USA.
Talk at KITP Cosmic web workshop
- 2022/10/25 **The baryonic content of cosmic filaments in the IllustrisTNG simulations**, Seoul-Korea.
Talk at 10th KIAS workshop on Cosmology and Structure formation
- 2022/08/13 **Unveiling filamentary streams connected to galaxies at $z=2$ in the TNG50 simulation**, MPA, Garching-Germany.
Talk at the Virgo Consortium meeting
- 2021/11/05 **Gas properties in cosmic filaments**, Kavli Institute for Astronomy and Astrophysics, Beijing-China.
Talk at the KooGiG-21 conference
- 2021/10/29 **Characterising cosmic filaments using hydro-dynamical simulations**, EPN, Quito-Ecuador.
Talk at the XVII Encuentro de Física
- 2021/06/09 **Physical properties of Cosmic Filaments**, Le Bastit-France.
Talk at the QUERCY2021 workshop.
- 2020/12/14 **Gas properties in Cosmic Filaments**, ICTP-SAIFR, Sao Paulo, Brazil.
Poster for the Latin America Workshop.
- 2020/01/31 **Populations of filaments from the galaxy distribution in simulations**, Leiden-The Netherlands.
Talk at the workshop *The Cosmic Web in the Local Universe*.
- 2019/07/13 **Simulations in Astrophysics**, Hossegor-France.
Talk at the ByoPIC week workshop.
- 2019/02/20 **A few physical properties of the cosmic web**, IAP, Paris-France.
Talk at the *Elbereth* Conference.

Outreach

- 2023/03/15 **Women in Science Ecuador**, Quito-Ecuador, Co-organiser and speaker at event gathering 1000+ students of age 10-16 in public schools in Ecuador (Pacific Coast, Andes mountains, and Amazon rainforest regions included).
- 2023/01/09 **Talk to high school students of Lycée La Condamine**, Quito-Ecuador, Presentation about studies in France and astrophysics. Especial focus made on motivating young women to study exact sciences.
- 2022/05/09 **Speaker at Pint of Science 2022**, The Shamrock bar, Munich.
- 2022/02/02 **Interview for TV show promoting girls and women in science**, Quito-Ecuador, organised by the Ecuadorian Ministry of National Education.
- 2020/10/10 **Speaker at Le Jour de la Nuit**, Orsay-France, Outreach festival organised by Paris-Saclay University in collaboration with Orsay city.
- 2020/06/27 **Speaker and chat moderator at the Du Big Band aux Big Bands YouTube live festival**.
- 2020/01/06 **Talk *Una imagen del Universo* to elementary school kids**, Quito-Ecuador, organised by the Ministry of National Education.
- 2020/01/03 **Interview for the national TV show *Soy Ciencia***, Quito-Ecuador, organised by the Ministry of National Education.
- 2019/10/15 **Article for the EDUCA public magazine**, Quito-Ecuador.
- 2019/10/13 **Fete de la science at Paris-Sud University**, IAS, Orsay-France.
Build-your-own spectroscope workshop for kids.
- 2019/09/07 **Talk for secondary school children *Une image de notre Univers aujourd'hui***, Cité Universitaire, Paris-France, organised by the Association Française d'Astronomie (AFA).
- 2019/02/20 **Presentation of the life of a PhD student to high-school students**, IAS, Orsay-France.
- 2019/2020 **Participation to the Paris-Saclay advertisement campaign, featuring "Portraits of PhD students"**, Orsay-France.
- 2018/10/12 **Fete de la science at Paris-Sud University**, Orsay-France.

Computing skills & other interests

- **Python, C++, Mathematica, filament finders, statistical tools, parallelised computation.**
- **Languages:** Spanish (mother tongue), French (fluent), English (fluent), German (beginner), Italian (beginner).
- Dance (active since I was 9), music, performing arts.