Jaime E. FORERO-ROMERO

Born October 14, 1981. Bogotá, Colombia

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Universidad de los Andes
AA 4976, Bogotá, Colombia

Main Research Interests

- Cosmic Web Characterization
- Local Group Assembly
- Stochasticity in Galaxy Evolution
- Lyman-α emission in galaxies

Education

- PhD. Physics, Ecole Normale Supérieure de Lyon (France) 11/2007
- M.Sc.Physics (Magistère Interuniversitaire) Ecole Normale Supérieure (Paris, France), 08/2005
- Undergraduate Physics studies (3^{rd} & 4^{th} year), Instituto Balseiro (Argentina), 08/2001 - 08/2003
- Undergraduate Physics studies (1^{st} & 2^{nd} year), U. Nacional de Colombia, 07/1999 - 07/2001

Academic Positions

- Associate Professor, Physics Department, Universidad de los Andes (Colombia), 8/2015-
- Assistant Professor, Physics Department, Universidad de los Andes (Colombia), 8/2012-7/2015
- Gruber Fellow at the Astronomy Department UC Berkeley (USA), 10/2011-7/2012
- Postdoctoral Researcher at the Leibniz Institute for Astrophysics-Potsdam (AIP) (Germany), 10/2007-9/2011
- Graduate student at the Ecole Normale Supérieure de Lyon (France), 09/2006-09/2007
- Élève at the Ecole Normale Supérieure (Paris, France), 09/2003-08/2006
- Undergraduate fellow at the Instituto Balseiro (Bariloche, Argentina), 08/2001-08/2003

Honors and Awards

- 2011. IAU Peter and Patricia Gruber Foundation Fellowship

- 2006-2007. Graduate Research Fellowship (Allocation Couplée) of the French Ministry for Research and Education.

- 2003-2006. Scholarship at the Ecole Normale Supérieure (Paris), covers tuition fees plus room and board to pursue graduate studies and PhD research.

- 2001-2003. Undergraduate scholarship (covers tuition fees at the Instituto Balseiro plus room and board) from the Argentinian Atomic Energy Comission.

- 1999. Gold Medal in the National Chemistry Olympiad, Bogotá, Colombia (First Place, National Competition)

External Grants

- 2016. (PI) COLCIENCIAS grant to work on the Dark Energy Spectroscopic Instrument. (60 KUSD)

- 2011. (PI) IAU Peter and Patricia Gruber Foundation Fellowship. (50K USD).

Service

Service (International)

- 2015-present. Coordinator for the Andean Regional Office of Astronomy for Development.

- 2015. Main organizer of the Second Worskhop *A*stronomía en los Andes to convene astronomers in the Andean region.

- 2013. Main organizer of the First Worskhop *A*stronomía en los Andes to convene astronomers in the Andean region.

- 2014-present. Referee for JCAP

- 2013-present. Referee for the Astrophysical Journal

- 2011-present. Referee for Monthly Notices of the Royal Astronomical Society

- 2011. Co-organizer of the international conference *Young and Bright: understanding high redshigt structures* ($\sim$ 60 attendees), Potsdam.

- 2010/2011. Co-organizer of internal workshops to give an institute wide research update in the extragalactic astronomy branch ($\sim$ 30 attendees), Potsdam.

Service (Colombia)

- 2014. SOC member, 4th Colombian Congress of Astronomy (Pasto).

- 2013. Main organizer of the First Worskhop *A*stronomía en los Andes to convene astronomers in the Andean region.

- 2013. In charge of the Astronomy Undergraduate and Graduate Seminar at Uniandes.

- 2012. Co-organizer and SOC member, 3rd Colombian Congress of Astronomy (Bucaramanga)

- 2010-present. Referee for the Colombian funding agency *COLCIENCIAS*

- 2010-present. Referee for *Revista Colombiana de Física*

- 2010. SOC member, 2nd Colombian Congress of Astronomy (Bogotá).

- 2008. Co-organizer and SOC member, 1st Colombian Congress of Astronomy (Medellín).

Teaching (University Lectures)

Summary of 3 years of teaching at Uniandes. 12 courses and 500 students in total. Average rating by students: 3.61/4.00 (weighted by student number).

- *Physics I (Newtonian Mechanics)*. Universidad de los Andes, 2015-I, Student's raiting: 3.86/4.00 (96 students)

- *Electromagnetism II*. Universidad de los Andes, 2015-I, Student's rating: 3.65/4.00 (6 students).

- *Astronomy Workshop (Introductory Seminar)*. Universidad de los Andes, 2015-I, Student's rating: 3.86/4.00 (10 students).

- *Physics II (Electromagnetism)*. Universidad de los Andes, 2014-II, Student's rating: 3.78/4.00 (64 students).

- *Computational Methods (Basic)*. Universidad de los Andes., 2014-II, Student's rating: 3.49/4.00 (20 students).

- *Physics II (Electromagnetism)*. Universidad de los Andes, 2014-I, Student's rating: 3.55/4.00 (60 students).

- *Computational Methods (Basic)*. Universidad de los Andes., 2014-I, Student's rating: 3.76/4.00 (12 students).

- *Physics II (Electromagnetism)*. Universidad de los Andes, 2013-II: 3.47/5.00 (61 students).

- *Computational Physics (Basic)*. Universidad de los Andes., 2013-II, Student's rating: 3.36/4.00 (28 students).

- *Physics I (Newtonian Mechanics)*. Universidad de los Andes., 2013-I, Student's rating: 3.52/4.00. (68 students).

- *Computational Physics (Basic)*. Universidad de los Andes., 2013-I, Student's rating: 3.90/4.00 (10 students).

- *Physics I (Newtonian Mechanics)*. Universidad de los Andes., 2012-II, Student's rating: 3.41/4.00 (65 students).

- *Introduction to Physics (module on Astrophysics)*. Universidad de los Andes. 2012-II

- *Introduction to Astrophysics (Teaching Assistant)*, Undergraduate Level Course at the University of Lyon I, Spring 2007.

Teaching (Schools)

- *Lectures on Cosmology and Galaxy Evolution*, Second Guatemalan School on Astrophysics, Antigua, December 2015

- *Lectures on Galaxy Evolution*, V Colombian Astrophysics Summer School, Observatorio Astronomico Nacional, Summer 2009

Postdocs Supervised (Finished)

- 2015-2017: Verónica Arias. Dynamics of satellites in the Local Group.

Students Supervised (Ongoing)

- Since September 2015 (as co-advisor): Sebastian Bustamante. PhD student at the Heidelberg Institute for Theoretical Studies. Research project on filamentary gas accretion onto galaxies

Students Supervised (Finished)

- 2016-20: Nicolás Romero Díaz. Undegraduate thesis in Physics at Universidad de los Andes. *Observational evidence of star formation stochasticity in the CALIFA dataset.*

- 2016-20: David Esteban Bernal Neira. Undegraduate thesis in Physics at Universidad de los Andes. *Acotando las velocidades tangenciales de las galaxias satélite de Andrómeda utilizando optimización no lineal.*

- 2016-10: Sergio Hernández Charpak. Undegraduate thesis in Physics at Universidad de los Andes. *Laniakea in a cosmological context.*

- 2015-20: María Camila Remolina Gutiérrez. Undegraduate thesis in Physics at Universidad de los Andes. *The joint effect of outflows and rotation on the Lyman-alpha line.*

- 2015-10: Juan Nicolás Garavito Camargo. Master thesis in Physics at Universidad de los Andes. *The effect of gas bulk rotation on the Lyman-alpha line.*

- 2015-10: Christian Nicanor Poveda Ruiz. Undegraduate thesis in Physics at Universidad de los Andes. *A semi-analytic approach to formation processes in galaxies.*

- 2014-20: Camilo Andrés Rivera Lozano. Undergraduate thesis in Physics at Universidad de los Andes. *Impacto de los parámetros cosmológicos en la estructura a gran escala del Universo.*

- 2013-10: Sebastian Bustamante. Undergraduate thesis in Physcis at Universidad de Antioquia (Colombia) on the large scale environment of the Local Group.

- 2012-10: David Noreña. Undergraduate thesis at Universidad de Antioquia (Colombia) on tidal streams in the Milky Way.

- 2010-10. Julián Mejía. Undergraduate thesis at the Universidad de Antioquia on a halo model of Lyman-α emitters at high redshift.

Jury of Master/PhD Thesis

- 2015. César Chachón. PhD student (physics) at the Universidad Nacional de Colombia. Thesis on observational probes of cosmological homogeneity.

- 2013. Roger Hurtado. Master student (astronomy) at the Observatorio Astronómico Nacional de Colombia. Thesis on gravitational lensing.

Bibliometrics

- Refereed journal articles: 26
- Google Scholar statistics. Total Number of Citations: 562. H-index: 12.
- ADS statistics. Total Number of Citations: 517. H-index: 12.

Publications

Refereed Journal Articles

26 *Quantifying and controlling biases in dark matter halo concentration estimates*, C.N. Poveda-Ruiz, **J.E. Forero-Romero**, J.C. Muñoz-Cuartas. Accepted for publication in ApJ Letters, 2016.

25 *Boosting Lya and HeII 1640A Line Fluxes from Pop III Galaxies: Stochastic IMF Sampling and Departures from Case-B.* L. Mas-Ribis, M. Dijkstra, **J.E. Forero-Romero**, Accepted for publication in ApJ, 2016.

24 *Impact of Cosmic Variance on the Galaxy-Halo Connection for Lyman-α emitters.* J.E. Mejía-Restrepo, **J.E. Forero-Romero**, ApJ, 821, 1, 2016

23 *SPOKES: An end-to-end simulation facility for spectroscopic cosmological surveys*, Nord, B.; Amara, A.; Réfrégier, A.; Gamper, La.; Gamper, Lu.; Hambrecht, B.; Chang, C.; **Forero-Romero, J. E.**; Serrano, S.; Cunha, C.; Coles, O.; Nicola, A.; Busha, M.; Bauer, A.; Saunders, W.; Jouvel, S.; Kirk, D.; Wechsler, R., Astronomy and Computing, 15, 1, 2016

22 *Tensor anisotropy as a tracer of cosmic voids*, S. Bustamante, **J.E. Forero-Romero**, MNRAS, 453, 497, 2015

21 *The Local Group in the cosmic web*, **J.E. Forero-Romero**, R. González, ApJ, 799, 1, 2015.

20 *Cosmological constraints from the redshift dependence of the Alcock-Paczynski effect in the galaxy density gradient field*, X-D. Li, C. Park, **J.E. Forero-Romero**, J. Kim, ApJ, 796, 2, 2014.

19 *The impact of gas bulk rotation on the lyman-alpha line* J.N. Garavito-Camargo, **J.E. Forero-Romero**, M. Dijkstra, ApJ, 795, 2, 2014.

18 *Characterizing SL2S galaxy groups using the Einstein radius*, T. Verdugo, V. Motta, G. Foëx, **J. E. Forero-Romero**, R. P. Muñoz, R. Pello, M. Limousin, A. More, R. Cabanac, G. Soucail, J. P. Blakeslee, A. J. Mejía-Narváez, G. Magris, J. G. Fernández-Trincado, Astronomy & Astrophysics, 571, id.A65, 2014.

17 *Systematic uncertainties from halo asphericity in dark matter searches* N. Bernal, **J.E. Forero-Romero**, R. Garani, S. Palomares-Ruiz, JCAP, 09, 004, 2014.

16 *Cosmic web alignments with the shape, angular momentum and peculiar velocities of dark matter halos*, **J.E. Forero-Romero**, S. Contreras, N. Padilla, MNRAS, 443, 1090, 2014.

15 *The abundance of Bullet Groups in ΛCDM*, J. G. Fernández-Trincado, **J. E. Forero-Romero**, G. Foex, V. Motta, T. Verdugo, V. Motta, ApJ Letter, 787, L32, 2014.

14 *The MultiDark Database: Release of the Bolshoi and MultiDark Cosmological Simulations* , K. Riebe , A. M. Partl, H. Enke, **J.E. Forero-Romero**, S. Gottloeber, A. Klypin, G. Lemson, F. Prada, J. R. Primack, M. Steinmetz, V. Turchaninov, Astronomische Nachrichten, 334, 691, 2013.

13 *The kinematics of the Local Group in a cosmological context*, **J.E. Forero-Romero**, Y. Hoffman, S. Bustamante, S. Gottloeber, G. Yepes, ApJ Letters, 767, 1, 2013

12 *The velocity shear tensor: tracer of halo alignment*, Libeskind N., Hoffman Y., **J.E. Forero-Romero** , S. Gottloeber, A. Knebe, M. Steinmentz, A. Klypin, MNRAS 428, 2489, 2013

11 *Effects of Star Formation Stochasticity on the Ly alpha & Lyman Continuum Emission from Dwarf Galaxies*, **J. E. Forero-Romero** & M. Dijkstra, MNRAS 428, 2163, 2013

10 *A kinematic classification of the cosmic web*, Y. Hoffman, O. Metuki , G. Yepes, S. Gottloeber, **J. E. Forero-Romero**, N. I. Libeskind, A. Knebe, MNRAS, 425, 2049, 2012

9 *Modelling the fraction of Lyman Break Galaxies with strong Lyman-alpha emission at* $5 < z < 7$ **Forero-Romero J.E.**, Yepes G., Gottloeber S., Prada F., MNRAS, 419, 952, 2012

8 *The dark matter assembly of the Local Group in constrained cosmological simulations of a* ΛCDM *universe* **Forero-Romero** J.E., Hoffman Y., Yepes G., Gottlöber S., Piontek R., Klypin A., Steinmetz M., MNRAS, 417, 1434, 2011

7 *Halo based reconstruction of the cosmic mass density field* Munõz-Cuartas J. C., Müller V, **Forero-Romero** J. E., MNRAS, 417, 1303, 2011

6 `CLARA`*'s view on the escape fraction of Lyman-*α *photons in high redshift galaxies* **Forero-Romero** J.E., Yepes G., Gottlöber S., Knollmann S., Cuesta A., Prada F., MNRAS, 415, 3666, 2011

5 *Bullet Clusters in the MareNostrum Universe*. **Forero-Romero** J.E., Yepes G., Gottlöber S., ApJ, 725, 1, 2010.

4 *Simulated vs. observed UV emission at high redshift: a hint for a clumpy ISM?* . **Forero-Romero** J.E., Yepes G., Gottlöber S., Knollmann S., Khalatyan A., Cuesta A., Prada F., MNRAS Letters, 403, L31-L35, 2010

3 *The coarse geometry of merger trees in* ΛCDM. **Forero-Romero** J.E., MNRAS, 399, 762-768, 2009

2 *A Dynamical Classification of the Cosmic Web*. **Forero-Romero** J.E., Hoffman Y., Gottloeber S., Klypin A., Yepes G., MNRAS, 396, 1815-1824, 2009

1 LeMoMaF*: Lensed Mock Map Facility*. **Forero-Romero** J.E., Blaizot J., Devriendt J., Van Waerbeke L., Guiderdoni B., MNRAS, 379. 1507-1518, 2007

Non refereed

1 *Visualising Matter and Cosmologies: an Example Based on a Transhistorical Approach*, Lucia Ayala, Jaime E. Forero-Romero, Column 7, pp. 76-82 (2011)

Selected Talks

- 2016, *Cosmology with the Cosmic Web*, XV Latin-American Regional IAU Meeting, Colombia.

- 2014, *The Local Group in the Cosmic Web*, 11th Potsdam Thinkshop on Satellite Galaxies and Dwarfs in the Local Group, Potsdam.

- 2013, *Física fundamental y astronomía: conexión a través de la formación de galaxias*, Colombian Physics Conference, Colombia

- 2013, *Stochasticity in high-z dwarf galaxies*, Extragalactic Group Seminar, PUC, Santiago

- 2012, *New Topics on High-z Galaxy formation*, Cosmology Group Seminar, MPA, Garching

- 2012, *Towards a panchromatic picture of high-z galaxies*, Cosmology Group Seminar, Stanford

- 2011, *Building a panchromatic model of high-z galaxies*, Second Workshop on Numerical and Observational Astrophysics: From the First Structures to the Universe Today, Institute for Astronomy and Space Physics (IAFE), Buenos Aires.

- 2011, *Expanding universes: the evolution of numerical simulations in physical cosmology*, Computer Simulations and the Changing Face of Scientific Experimentation, University of Stuttgart, Stuttgart.

- 2011, *Towards a panchromatic model of high-z galaxies*, First Galaxies, Ringberg Castle, Munich.

- 2011, *Spectral and physical properties of high-z galaxies*, Bridging Electromagnetic Astrophysics and Cosmology with Gravitational Waves, Milano.

- 2009 *Understanding High-z Lyman Alpha Emitters*, Fall Meeting German Astronomical Society, Potsdam

- 2009 *The Milky Way in the Semi-Analytic Context*, Open Problems in Galaxy Formation, Potsdam

- 2008 *IR and submm galaxies in Semi-Analytic Models of Galaxy Formation*, Mexican Congress of Astronomy and Astrophysics, Mexico City

- Since 2006, different seminars at Max Planck Institute for Astrophysics, University of British Columbia, Marseille Observatory, Hebrew U. of Jerusalem, U. Nacional Autónoma de México, U. de Antioquia (Colombia), Observatorio Astronómico Nacional (Colombia), U. Nacional de Colombia, U. de los Andes (Colombia), New Mexico State U., Arizona State U., Columbia U., Princeton U., Harvard U., UC Berkeley, UC Santa Cruz, Pontificia Universidad Catolica (Chile), Universidad de Chile.

Art & Science

- 2015: Collaboration with visual artist Mónica Naranjo to produce a *Cosmological Calendar 2016*.

- 2014: Collaboration with architect and plastic artist Carlos Moncada on the project *Paisajes Estereoplanetarios* as part of the *Astronomía Periférica*.

- 2013: Founding member of the project *Astronomía Periférica* that aims at taking astronomy to Bogota's periphery through artistic interventions. Secured funding for $\sim$ 5KEuro from the Office of Astronomy for Development to kickstart the project.

- 2012: Founding member and organizer of the Art and Science Meetings (Encuentros de Arte y Ciencia) in Bogotá.

- 2011: *Fluid Skies* secured funding for $\sim$ 50 KEuro to make the Carved Air exhibition (Berlin, 2012), print the exhibition catalog and prepare academic meetings on the scientific and historical concepts of the project. The sponsors were: Ernst Schering Foundation (Germany), University of California Institute for Research in the Arts (USA) and the Arts Council Korea (ARKO).

- Since 2011 member of the *Fluid Skies* collaboration together with Yunchul Kim (artist) and Lucia Ayala (Art Historian). *Fluid Skies* is a creative and research platform to explore the fluid materiality of the cosmos from the perspectives of astrophysics, art, history and philosophy.

- 2010, Talk on *Simulations of Large Scale Structure Evolution*, Institut für Raumexperimente - Olafur Eliasson Studio, Berlin.

Languages

Spanish (native), English (fluent), French (fluent), German (proficient), Russian (beginner).