

# Jaime E. FORERO-ROMERO

Born 14 October, 1981. Bogotá, Colombia

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## Main Research Interests

- High Redshift Galaxy Evolution
- Milky Way Assembly
- Cosmic Web Characterization

## Education

- PhD. Physics, Ecole Normale Supérieure de Lyon (France) 11/2007
- M.Sc.Physics (Magistre Interuniversitaire) Ecole Normale Supérieure (Paris, France), 08/2005
- Undergraduate Physics studies (3<sup>rd</sup>-4<sup>th</sup> years), Instituto Balseiro (Argentina), 08/2001 - 08/2003
- Undergraduate Physics studies (1<sup>st</sup>-2<sup>nd</sup> years), U. Nacional de Colombia, 07/1999 - 07/2001

## Academic Positions

- Assistant Professor, Physics Department, Universidad de los Andes (Colombia), 8/2012-
- Gruber Fellow at the Astronomy Department UC Berkeley (USA), 10/2011-7/2012
- Postdoctoral Researcher at the Astrophysical Institute Potsdam (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 Commission.
- 1999. Gold Medal in the National Chemistry Olympiad, Bogotá, Colombia (First Place, National Competition)

## Grants

- 2012. NVIDIA Academic Partnership, Inkind donation of 1 TESLA GPU (worth  $\sim 2$ K USD).
- 2011. IAU Peter and Patricia Gruber Foundation Fellowship. 50K USD.

## Service

- 2013, In charge of the Astronomy Graduate Seminar at Uniandes.
- 2012, Founding member of the Research Network REVECA (Red Virtual de Estudios en Ciencias Astrofísicas).
- 2012, Co-organizer and SOC member, 3rd Colombian Congress of Astronomy (Bucaramanga)
- 2011, Co-organizer of the international conference *Young and Bright: understanding high redshift structures* ( $\sim 60$  attendees), Potsdam.
- 2011-present, Referee for Monthly Notices of the Royal Astronomical Society
- 2010-present, Referee for the Colombian funding agency *COLCIENCIAS*
- 2010-present, Referee for *Revista Colombiana de Física*
- 2010/2011, Co-organizer of internal workshops to give an institute wide research update in the extragalactic astronomy branch ( $\sim 30$  attendees), Potsdam.
- 2010, SOC member, 2nd Colombian Congress of Astronomy (Bogotá).
- 2008, Co-organizer and SOC member, 1st Colombian Congress of Astronomy (Medellín).

## Teaching

- 2013-I, *Computational Physics*. Universidad de los Andes.
- 2013-I, *Physics I (Newtonian Mechanics)*. Universidad de los Andes.
- 2012-II, *Physics I (Newtonian Mechanics)*. Universidad de los Andes.
- 2012-II, *Introduction to Physics (module on Astrophysics)*. Universidad de los Andes.
- *Lectures on Galaxy Evolution*, V Colombian Astrophysics Summer School, Observatorio Astronomico Nacional, Summer 2009
- *Introduction to Astrophysics (Teaching Assistant)*, Undergraduate Level Course at the University of Lyon I, Spring 2007.

## Students Supervised

- Since October 2012: Nicolás Garavito. Undergraduate student at Universidad Nacional de Colombia (Bogotá). Research project on radiative transfer of the Lyman- $\alpha$  line.
- Since October 2012: Nataly Mateus. Undergraduate thesis at Universidad de Antioquia (Colombia) on weak lensing effects on observations of distant galaxies.
- Since August 2012: Andrés Romero. Undergraduate student at Universidad de los Andes (Colombia). Research project on the parallelization of a radiative transfer code to GPU platforms.
- Since August 2012: Sebastian Bustamante. Undergraduate thesis at the Universidad de Antioquia (Colombia) on the large scale environment of the Local Group.
- Since January 2011: Sergio Sanes. Master thesis at the Universidad de Antioquia (Colombia) on the baryonic contents of the Local Group using semi-analytic models.
- 2011-2012: David Noreña. Undergraduate thesis at Universidad de Antioquia (Colombia) on tidal streams in the Milky Way.
- 2009-2010: Julián Mejía. Undergraduate thesis at the Universidad de Antioquia (Colombia) on a halo model of Lyman- $\alpha$  emitters at high redshift. (Since 2012 master student in Chile)

## Publications

### Refereed Journal Articles

- 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* Accepted (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., **Forero-Romero J.E.**, Gottloeber S., Knebe A., Steinmetz M., Klypin A., *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  $\Lambda$ CDM 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* Muñoz-Cuartas J. C., Müller V, **Forero-Romero J. E.**, *MNRAS*, 417, 1303, 2011
- 6 *CLARA's view on the escape fraction of Lyman- $\alpha$  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  $\Lambda$ CDM.* **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

- 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.

## Art & Science

- 2012. Secured 5 KEuro of funding from the IAU Astronomy for Development Office to implement the project *Astronomia Periferica* in collaboration with the artists Alejandro Tamayo and Luis Bustamante.
- 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)