

# Sebastián Bustamante Jaramillo

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Curriculum Vitae

HITS gGmbH  
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## POSITION

**PhD candidate** at Heidelberg Institute for Theoretical Studies.

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## EDUCATION

- 2006 High School Diploma**, *Institución Educativa Cisneros*, Cisneros, Colombia.
- 2007-2013 B.Sc. in Physics**, *Physics Institute, Universidad de Antioquia*, Medellín, Colombia.  
**Thesis** “The place of the Milky Way and Andromeda in the cosmic web”.  
**Supervisor** Prof. Dr. Jaime E. Forero-Romero
- 2015- PhD in Astrophysics**, *Heidelberg University*, Heidelberg, Germany.  
**Supervisor** Prof. Dr. Volker Springel

## ADDITIONAL EDUCATION

- 2008 Extension Course in Planetary Sciences**, *Faculty of Exact and Natural Sciences, Universidad de Antioquia*, Medellín, Colombia.

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## FIELDS OF INTEREST

Cosmology. Large-scale structure formation. Galaxy astrophysics. Super Massive Blackholes. Planetary interior. Numerical simulations. Computational astrophysics. General astrophysics and physics. Programming.

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## HONOURS, AWARDS, AND ACCOMPLISHMENTS

- 2012 First Best Oral Presentation**, *II International Congress of Astrobiology*, Medellín, Colombia.
- 2013 Best physics graduate student**, *Universidad de Antioquia*, Medellín, Colombia.
- 2015 DAAD PhD Scholarship**, Germany.

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## PUBLICATIONS

- 2017** *The ex-situ component of the Auriga discs: The hunt for the Milky Way’s ex-situ disc is not yet over*, F.A. Gómez, R.J.J. Grand, A. Monachesi, S.D.M. White, **S. Bustamante**, F. Marinacci, R. Pakmor, C.M. Simpson, V. Springel, D.J.R. Campbell, C.S. Frenk, A. Jenkins, To be submitted to MNRAS.
- 2016** *Geomagnetic properties of Proxima Centauri b analogues*, J.I. Zuluaga, **S. Bustamante**, Arxiv 1609.00707. **ADS:** <http://adsabs.harvard.edu/abs/2016arXiv160900707Z>

- 2015 *Tensor anisotropy as a tracer of cosmic voids*, **S. Bustamante**, J.E. Forero-Romero, MNRAS 453 1 497, 2015. **ADS:** [adsabs.harvard.edu/abs/2015MNRAS.453..497B](https://ui.adsabs.harvard.edu/abs/2015MNRAS.453..497B)
- 2013 *The kinematics of the Local Group in a cosmological context*, J.E. Forero-Romero, Y. Hoffman, **S. Bustamante**, S. Gottloeber, G. Yepes, ApJL 767 L5, 2013. **ADS:** [adsabs.harvard.edu/abs/2013ApJ...767L...5F](https://ui.adsabs.harvard.edu/abs/2013ApJ...767L...5F)
- 2013 *The influence of thermal evolution in the magnetic protection of terrestrial planets*, J.I. Zuluaga, **S. Bustamante**, P.A. Cuartas, J.H. Hoyos, ApJ 770 23, 2013. **ADS:** [adsabs.harvard.edu/abs/2013ApJ...770...23Z](https://ui.adsabs.harvard.edu/abs/2013ApJ...770...23Z)

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## CONFERENCE PUBLICATIONS

- 2014 *The Local Group in an explicit cosmological context*, J.E. Forero-Romero, Y. Hoffman, **S. Bustamante**, S. Gottloeber, G. Yepes, XIV Latin American Regional IAU Meeting, Revista Mexicana de Astronomía y Astrofísica (Serie de Conferencias) Vol. 44, pp. 118-118, 2014. **ADS:** [adsabs.harvard.edu/abs/2014RMxAC..44..118F](https://ui.adsabs.harvard.edu/abs/2014RMxAC..44..118F)
- 2013 *Habitability in binary systems*, P.A. Mason, J. Clark, P.A. Cuartas, J.I. Zuluaga, **S. Bustamante**, American Astronomical Society, AAS Meeting # 222, # 302.05, 2013. **ADS:** [adsabs.harvard.edu/abs/2013AAS...22230205M](https://ui.adsabs.harvard.edu/abs/2013AAS...22230205M)
- 2013 *Habitability in binary systems: the role of UV reduction and magnetic protection*, J. Clark, P.A. Mason, J.I. Zuluaga, P.A. Cuartas, **S. Bustamante**, American Astronomical Society, AAS Meeting #222, #217.03, 2013. **ADS:** [adsabs.harvard.edu/abs/2013AAS...22221703C](https://ui.adsabs.harvard.edu/abs/2013AAS...22221703C)

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## TEACHING

- TA Physics 1 (Newtonian Mechanics), 2013/I**, *Faculty of Exact and Natural Sciences, Universidad de Antioquia*, Medellín, Colombia.
- TA Computational Complement of Physics 2 (Electricity and Magnetism), 2013/I**, *Faculty of Exact and Natural Sciences, Universidad de Antioquia*, Medellín, Colombia.
- TA Computational Complement of Physics 3 (Oscillations and Waves), 2013/I**, *Faculty of Exact and Natural Sciences, Universidad de Antioquia*, Medellín, Colombia.
- Lect. Introductory Physics, (2013/II, 2014/I)**, *Faculty of Engineering, Universidad de Antioquia*, Medellín, Colombia.
- Lect. Laboratory of Physics 1 (Newtonian Mechanics), (2013/II, 2014/I)**, *Faculty of Pharmaceutical Chemistry, Universidad de Antioquia*, Medellín, Colombia.
- Lect. Introductory Computation, 2014/II**, *Faculty of Exact and Natural Sciences, Universidad de Antioquia*, Medellín, Colombia.
- Lect. Computational Methods for Astronomy and Physics, (2014/II, 2015/I)**, *Faculty of Exact and Natural Sciences, Universidad de Antioquia*, Medellín, Colombia.

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## RESEARCH EXPERIENCE

- 2010-2011 **Young Investigator Programme**, Fundamental of quantum mechanics, *Group of Atomic and Molecular Physics (GFAM), Committee for Research Development (CODI), Universidad de Antioquia*, Medellín, Colombia.
- 2011-2012 **Young Investigator Programme**, Thermal evolution of rocky exoplanets, *Group of Computational Physics and Astrophysics (FACom), Committee for Research Development (CODI), Universidad de Antioquia*, Medellín, Colombia.

August, 2012 **Research Internship**, *Physics Department, Universidad de los Andes*, Bogotá, Colombia.

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## LANGUAGES

**Spanish** Native speaker.

**English** Proficient.

**German** Intermediate.

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## COMPUTER SKILLS

**Systems** Linux, MSWindows.

**Development** C, Python, Bash.

**Software** Mathematica, LaTeX, gnuplot, Gadget.

**Tools** N-body simulations, SPH, MonteCarlo, Finite Differences, Numerical integrators, Audio processing.

**Repositories** A list of my projects can be found in my *github* page: <https://github.com/sbustamante>.

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## PARTICIPATION IN EVENTS

**2010** (Poster) **PLYNET, Python Planetary Physics Package**, *II Colombian Congress of Astronomy and Astrophysics*, Bogotá, Colombia, 2010.

**2011** (Oral presentation) **Thermal evolution of rocky exoplanets**, *III International Congress of Formation and Modelling in Basic Sciences*, Medellín, Colombia, 2011.

**2012** (Oral presentation) **Numerical modelling of the interior and thermal evolution of habitable planets**, *II International Congress of Astrobiology*, Medellín, Colombia, 2012.

**2012** (Oral presentation) **The place of the Local Group in the cosmic web**, *III Colombian Congress of Astronomy and Astrophysics*, Bucaramanga, Colombia, 2012.

**2014** (Oral presentation) **The fractional anisotropy as a tracer of cosmic voids**, *IV Colombian Congress of Astronomy and Astrophysics*, Pasto, Colombia, 2014.

**2016** (Oral presentation) **Spin evolution of Super Massive Blackholes**, *Virgo Meeting*, Durham, United Kingdom, 2016.

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## SCHOOLS AND WORKSHOPS

**2014** **First Andean School of Astronomy and Astrophysics (EAAA)**, Quito, Ecuador, 2014.

**2016** **IMPRS Summer School in Astrostatistics**, Heidelberg, Germany, 2016.

**2017** **The IFT School on Cosmology Tools**, Madrid, Spain, 2017.

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## PERSONAL ACTIVITIES

General programming. Swimming. Reading. Playing guitar. Hiking. Cycling. Papercraft.