

# Sebastian Bustamante

## Curriculum Vitae

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### CONTACT INFORMATION

**Full name:** Sebastián Bustamante Jaramillo  
**Institution:** Heidelberg Institute for Theoretical Studies (HITS)  
**Place** Heidelberg, Germany

**Citizenship:** Colombian  
**Email:** sebastian.bustamante@h-its.org  
**Website:** sbustamante.github.io/Sebastian-Bustamante  
**Github:** github.com/sbustamante  
**Born:** June 20th 1990, Maceo, Colombia.

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### RESEARCH EMPLOYMENT

**2015-present** **PhD candidate at Heidelberg Institute for Theoretical Studies.**  
3 years PhD program at Heidelberg Institute for Theoretical Studies (HITS).

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### EDUCATION AND ACADEMIC DEGREES

**2015-2018\*** **PhD in Astrophysics at Heidelberg University**  
\*Graduation date is flexible.  
Thesis title: *Modelling supermassive black holes in hydrodynamical simulations of galaxy formation.*  
Advisor: Prof. Dr. Volker Springel.

**2014-2015\*** **MSc in Physics at Universidad de Antioquia**  
\*Two terms completed.

**2007-2012** **BSc in Physics at Universidad de Antioquia**  
Degree awarded April 4th 2013.  
Thesis title: *The place of the Milky Way and Andromeda in the cosmic web.*  
Advisor: Prof. Dr. Jaime E. Forero-Romero.

**2001-2006** **High School.**  
Institución Educativa Cisneros, Colombia.

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### SCHOLARSHIPS AND PRIZES

**2015** **PhD scholarship from the DAAD (German Academic Exchange Service).**  
3 years PhD scholarship for going to HITS. ~ 45000 EUR.

**2013** **Best BSc physics student of 2012 from Universidad de Antioquia.**  
Exonerated from paying tuition fees of the master program.

**2012** **Best oral presentation at 2nd International Congress of Astrobiology.**

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## COMPUTER AND TECHNICAL SKILLS

- **Hydrodynamical simulations:** Running and developing simulations with Gadget and AREPO codes. I have developed a module in AREPO to integrate spin evolution of supermassive black holes in simulations of galaxy formation.
- **Software development:**
  - **PLYNET:** I have developed a software to calculate the interior structure and thermal evolution of rocky planets. ([github.com/facom/Plynet/tree/1.0-release](https://github.com/facom/Plynet/tree/1.0-release)).
  - **Void Finder:** I also developed a method to find voids in cosmological simulations based on the tidal-tensor and the watershed transform. ([github.com/sbustamante/Void-Finder](https://github.com/sbustamante/Void-Finder))
- **Programming languages:** Python, C, C++, Bash, Mathematica, TI-Basic.
- **Systems and Software:** Linux, MSWindows, LaTeX, gnuplot, git.
- **Repositories:** A list of my projects can be found in my *github* page: [github.com/sbustamante](https://github.com/sbustamante)

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## TEACHING EXPERIENCE

**2013 Tutoring at Universidad de Antioquia:**

Physics 1, computational lab of Physics 2, computational lab of Physics 3.

**2013-2015 Lecturer at Universidad de Antioquia:**

Introduction to physics, lab of Physics 1, introduction to computers, computational methods for Astronomy and Physics ([github.com/sbustamante/ComputationalMethods](https://github.com/sbustamante/ComputationalMethods)).

**2017 Tutoring at Heidelberg University:**

Introduction to computational physics.

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## MENTORING

I am the main scientific advisor of Daniel Montenegro. He is an undergraduate student of Astronomy at Universidad de Antioquia, in Colombia.

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## LANGUAGES

**Spanish** Native speaker.

**English** Proficient.

**German** Intermediate.

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## REFERENCES

- **Prof. Volker Springel**  
[Volker.Springel@h-its.org](mailto:Volker.Springel@h-its.org)  
Heidelberg Institute for Theoretical Studies, Heidelberg, Germany.  
Max Planck Institute for Astrophysics, Garching, Germany.
- **Prof. Jaime E. Forero-Romero**  
[je.forero@uniandes.edu.co](mailto:je.forero@uniandes.edu.co)  
Universidad de los Andes, Bogotá, Colombia.
- **Dr. Martin Sparre**  
[msparre@aip.de](mailto:msparre@aip.de)  
Potsdam University, Potsdam, Germany.