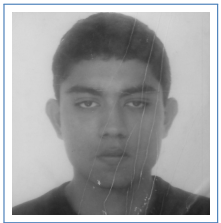
Sebastián
Bustamante Jaramillo

Curriculum Vitae

Bello, Colombia
Avenida 21 # 57 AA 65
+057 3108992409
+057 (4) 4820138
macsebas33@gmail.com



I am a physicist with a strong interest in astrophysics, specifically in cosmology. I have always thought humanity's understanding the large-scale universe through science is like a bacteria colony trying to build a complete map of the earth or even more. I am looking forward to cooperate and get involve with high quality research teams in order to contribute my humble grain of sand to this grand and exciting enterprise called science. If I were asked to introduce myself in four words, they would be astrophysics-programming-swimming-guitar.

General Information

Name Sebastián Bustamante Jaramillo.
Date of Birth 20^{th} June, 1990.
Place of Birth Maceo - Colombia.
Nationality Colombian.
Marital Status Single.
Identification c.c. 1128400433 .
Address Avenida 21 # 57 AA 65, Bello - Colombia.
Home tel. +057 (4) 4820138 .
Mobile +057 3108992409 .
e-mail macsebas33@gmail.com.
Inst. e-mail sbustama@pegasus.udea.edu.co.

Education

2001-2006 **High School Diploma**, *Institución Educativa Cisneros*, Cisneros, Colombia.
2007-2012 **B.Sc. in Physics**, *Institute of Physics, Universidad de Antioquia*, Medellín, Colombia.
Thesis "The place of the Milky Way and Andromeda in the cosmic web".
Description This study is aimed to characterize the local environment of Local Group (LG)-like systems from dark matter simulations of the large-scale universe. Using two different types of simulations, an unconstrained simulation (Bolshoi project) and a set of constrained simulations (CLUES project), it is first constructed a LG-like sample based upon observational constrains on the kinematic properties and isolation criteria of the real LG, along with the results of the CLUES simulations. By using a tensorial scheme based upon the peculiar velocity field of the dark matter, the V-web scheme, it is classified the local environment of systems in each simulation. Finally, it has been found that LG-like systems lies preferentially in sheet-like regions, furthermore a significant environmental bias for the total mass and the specific energy. No correlations have been found for the specific angular momentum and other studied properties.
Advisor Jaime E. Forero-Romero, Ph.D.

Additional Education

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

Fields of Interest

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

Languages

Spanish Native speaker.

English Good.

Computer Skills

Systems Linux, MSWindows.

Development C/C++, Python, Basic, TI Basic, shell scripts.

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`.

Honours, Awards, and Accomplishments

2006 **The best graduate of the promotion**, *Institución Educativa Cisneros*, Cisneros, Colombia.

2007/II **Honour Roll**, *Universidad de Antioquia*, Medellín, Colombia.

2009/I **Honour Roll**, *Universidad de Antioquia*, Medellín, Colombia.

2009/II **Honour Roll**, *Universidad de Antioquia*, Medellín, Colombia.

2012 **First Best Oral Presentation**, *II International Congress of Astrobiology*, Medellín, Colombia.

Teaching

Assistant Instructor **Physics 1 (Newtonian Mechanics), 2013/I**, *Faculty of Exact and Natural Sciences, Universidad de Antioquia*, Medellín, Colombia.

Assistant Instructor **Computational Complement of Physics 2 (Electricity and Magnetism), 2013/I**, *Faculty of Exact and Natural Sciences, Universidad de Antioquia*, Medellín, Colombia.

Assistant Instructor **Computational Complement of Physics 3 (Oscillations and Waves), 2013/I**, *Faculty of Exact and Natural Sciences, Universidad de Antioquia*, Medellín, Colombia.

Adjunct Professor **Introductory Physics, 2013/II**, *Faculty of Engineering, Universidad de Antioquia*, Medellín, Colombia.

Adjunct Professor **Laboratory of Physics 1 (Newtonian Mechanics), 2013/II**, *Faculty of Engineering, Universidad de Antioquia*, Medellín, Colombia.

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.

Publications

1. *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.
2. *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.

References

- **Jaime E. Forero-Romero** (*Advisor*)
  Professor and Researcher, Foundations and Teaching Group of Physics and Dynamical Systems, Atomic and Molecular Physics Group.
  Instituto de Física, Universidad de Antioquia, Medellín, Colombia.
  Phone: 57-4-219 64 39.
  banghelo@fisica.udea.edu.co