Amalia Betancur | Curriculum Vitae

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Employment

- **Universidad EIA** — **Colombia**
  Full-Time Professor — *July 2012–Currently*
  Responsibilities: Teach physics courses for undegraduate students, conduct research projects and participate in committees related to the improvement of experimental labs and the syllabus review of the biomedical engineering program.

- **Universidad EIA** — **Colombia**
  Adjoint instructor — *2009–June 2012*
  Responsibilities: Teach physics courses for undegraduate students, improve the laboratories for mechanics, electricity and magnetism, and waves. Create the lab guides required for each experiment.

- **American University of Sharjah** — **United Arab Emirates**
  Laboratory Instructor — *Spring 2006 and Fall 2008*
  Teach undergraduate physics laboratories for engineering majors.

- **University of Florida** — **United States of America**
  Teaching Assistant — *2004-2005*
  Teach undergraduate physics laboratories and discussion sessions for engineering majors.

- **University of Hawaii** — **United States of America**
  Teaching Assistant — *Spring 2004*
  Teach undergraduate physics laboratories for engineering majors.

Education

- **University of Antioquia** — **Colombia**
  Ph.D., Summa Cum Laude, Graduation August 2019 — *2015–2019*
- **University of Florida** — **United States of America**
  M.Sc. in Physics — *2004–2005*
- **University of Hawaii at Manoa** — **United States of America**
  B.S in Physics, with distinction — *2001–2004*
- **University of Antioquia** — **Colombia**
  Undergraduate studies in Physics — *2000–2001*
- **PhD thesis:** *Fermionic dark matter and neutrino masses*
  My research interest is focused on the dark matter and the neutrino mass. I build minimal extensions of

the Standard Model that can address these problems. I have also used the multivariate analysis Matrix Element Method in order to constraint dark matter at the LHC.

- **Masters Research:** *Experimental condensed matter*

  During my Master studies I worked in the characterization of single molecule magnets through Electron Paramagnetic Resonance

Awards

- **PhD studies scolarship** *Colciencias (Colombian Administrative Department of Science)* Scholarship for PhD studies from 2015-2018.
- **Fulbright Scholarship Award** *Colombian PhD student, Spring 2017* Scholarship for a six month research internship at University of Florida
- **Teaching Award** *Universidad EIA* Second best teacher of 2014 at Universidad EIA.
- **Dean's list** *University of Hawaii at Manoa* Merit given in 2002 based on high Grade Point Average.
- **Young Research Assistant** *University of Antioquia* Merit given in 2000-2001 based on high Grade Point Average.

Technical skills

- **Programming Languages:** Proficient in: Python, Mathematica, TeX.
- **High Energy Physics packages:** FeynRules, SARAH, MadGraph, MadWeight and micrOMEGAS.

Interests and extra-curricular activity

- Teaching courses: • Model creation and innovative didactic strategies, 40 hours, SENA, February 2011. • Strategies for thought development 40 hours, SENA, June 2011.
- Astrophysics: Escuela Local de Astrofísica, Universidad de Antioquia March 2000 - May 2001.
- Memeber of the International Student Association, University of Hawaii at Manoa. August 2001-June 2003

Publications

- A. Betancur, O. Zapata, Phenomenology of doublet-triplet fermionic dark matter in non-standard cosmology and multicomponent dark sectors, submitted to Physical Review D. arXiv:1809.04990
- A. Betancur, R. Longas, O. Zapata, Doublet Triplet fermion dark matter and neutrino masses, Phys.Rev. D96 (2017) no.3, 035011
- Betancur, Amalia and Debnath, Dipsikha and Gainer, James S. and Matchev, Konstantin T. and Shyamsundar, Prasanth, Measuring the mass, width, and couplings of semi-invisible resonances with the Matrix Element Method, arXiv: 1708.07641
- S. Takahashi, A. Betancur-Rodriguez, S. Hill, S. Takasaki, J. Yamada and H. Anzai, Are Lebed's magic angles truly magic? Journal of Low Temperature Physics, Vol 142, No 3/4, 2006
- Saiti Datta, Amalia Betancur-Rodriguez, Sheng-Chiang Lee, Stephen Hill, Dolos Foguet-Albiol, Rashmi Bagai and George Christou, EPR Characterization of Half-Integer-Spin Iron Molecule-Based

Magnet, Polyhedron 26, 2007.

- Rashmi Bagai, Saiti Datta, Amalia Betancur-Rodriguez, Khalil A. Abboud, Stephen Hill and George Christou, Diversity of New Structural Types in Polynuclear Iron Chemistry with a Tridentate N,N,O Ligand, Inorganic Chemistry, 2007, 46.

Poster presentations

- A. Betancur, D. Debnath, J.S. Gainer, K.T. Matchev, and S. Prasanth, The Matrix Element Method applied to a Dark Matter problem, presented at the PIC2018: XXXVIII Symposium on Physics in Collision , Bogotá, Colombia (September 2018).
- A. Betancur Rodríguez, O. Zapata Noreña, The doublet-triplet scalar dark matter model, presented at the 4th Uniandes School on Particle Physics, Bogotá, Colombia (November 2015).
- E. Thompson, S. Takahashi, S. C. Lee, S. Datta, S. S. Kim, A. Betancur-Rodriguez, S. Hill, S. Takasaki, J.Yamada and H. Anzai, Study of the organic superconductor (TMTSF)2PF6 in a pressurized environment, presented at the 6th International Symposium on Crystalline Organic Superconductors, and Ferromagnets (ISCOM 2005), Key West, FL (September 2005).
- Saiti Data , Amalia Betancur-Rodriguez, Jon Lawrence, Sung-Su Kim , Steve Hill, High Frequency Electron Paramagnetic Resonance studies in Single Molecule Magnets, presented at the 72nd Annual Meeting of the Southeastern Section of the APS (2005 SEAPS), Gainesville, Florida, United States of America (Novembre 2005).
- Saiti Datta, Amalia Betancur-Rodriguez, Sheng-Chiang Lee, Stephen Hill, Dolos Foguet-Albiol, Rashmi Bagai and George Christou, EPR Characterization of Half-Integer-Spin IronMolecule-Based Magnets, presented at the 10th International Conference on Molecule-Based Magnets (ICMM), Victoria, BC, Canada (August 2006)

Talks

- Invited Speaker at Medellin's Planetarium for the inauguration of Phantom of the Universe:Then Hunt for Dark Matter show, June 2018
- Current constraints on the Doublet-Triplet fermion dark matter model. Presented at MOCa 2018 (Materia Oscura Colombia), July 2018
- A Model of Electroweak Scale Dark Matter with Neutrino Masses. Skype talk presented at MOCa (Materia Oscura Colombia), June 27 2017.
- Doublet-triplet fermion dark matter with neutrino masses. Presented at 1st Colombian Meeting on High Energy Physics. November 2016, Medellín, Colombia.