

MARÍA BENITO

PERSONAL INFORMATION

Born on 1989, in Asturias, Spain.

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EDUCATION

- 2015-Present* **Instituto de Física Teórica, Universidade Estadual Paulista, São Paulo (Brazil)**
Expected Feb. 2019 PhD
Supervisor: Prof. Dr. Fabio Iocco
Title: *Determination of the Dark Matter Distribution in the Milky Way (A study of its Uncertainties and Implications on Particle Dark Matter Searches.)*
- 2013-2014* **Universidad Autónoma de Madrid, Madrid (Spain)**
M.S. in Elementary Particles and Cosmology
Supervisors: Prof. Dr. Fabio Iocco & Dr. Miguel Pato
Title: *A Determination of the Dark Matter Density Structure in the Milky Way*
- 2007-2013* **Universidad Autónoma de Madrid, Madrid (Spain)**
5-year Degree of Physics
- 1996-2006* **Conservatorio Profesional de Música del Nalón, Sama de Langreo (Spain)**
Studies in violin, *Grado Elemental* (4 years) - *Grado Medio* (6 years)

RESEARCH INTERESTS

Dark Matter in galaxies: galaxy kinematics and dynamics, mass modelling of galaxies, distribution of Dark Matter in the Milky Way. Galaxy formation and evolution. Alternative theories of gravity. γ -ray astronomy. Statistics.

FELLOWSHIPS & SCHOLARSHIPS

- 2015-present* CAPES (Coordenação de Aperfeiçoamento de Nível Superior) fellow at Instituto de Física Teórica, UNESP, São Paulo (Brazil).
- September 2014* Multidark Summer Student at IFT-UAM/CSIC, Madrid (Spain).
- 2011-2012* Erasmus Grant at Humboldt Universität zu Berlin (Germany).
- 2007-2008* Excellence Grant to enter University by the Comunidad de Madrid.

SCIENTIFIC VISITS

- May, June 2018* DESY, Zeuthen (Germany).
- January 2018* CIEMAT, Madrid (Spain).
- July 2017* DESY, Zeuthen (Germany).

TALKS & SEMINARS

- December 2018* Seminar at University of Turin, Turin (Italy).
“*Milky Way Dark Matter Density Profile*”
- December 2018* Talk at LAPTh, Annecy (France).
“*Milky Way Dark Matter Density Profile*”
- November 2018* **II South American Dark Matter Workshop** at IFT-UNESP/ICTP-SAIFR, São Paulo (Brazil).
“*The Effect of Galactic Uncertainties on Particle Dark Matter Constraints*”
- October 2018* **The Puzzle of Dark Matter, Assembling the Pieces** at DESY, Hamburg (Germany).
“*Particle Dark Matter Constraints: the Effect of Galactic Uncertainties*”
- May 2018* **Tensions in the LCDM Paradigm** at Mainz Institute for Theoretical Physics (MITP), Mainz (Germany).
“*Testing Modified Gravity Theories with the Milky Way*”
- March 2018* **Reunião Temática Workshop** at IFT-UNESP/ICTP-SAIFR, São Paulo (Brazil).
“*Status of Large Magellanic Cloud Studies with CTA*”
- December 2017* Seminar at Institute for Theoretical Particle Physics and Cosmology, RWTH Aachen University, Aachen (Germany).
“*An Estimate of the Dark Matter Profile in the Galactic Bulge Region*”
- May 2017* **South American Dark Matter Workshop** at IFT-UNESP/ICTP-SAIFR, São Paulo (Brazil).
“*An Estimate of the Dark Matter Profile in the Galactic Bulge Region*”
- November 2016* **XIII Workshop on New Physics in Space** at IFT-UNESP/ICTP-SAIFR, São Paulo (Brazil).
“*An Estimate of the Dark Matter Profile in the Galactic Bulge Region*”
- October 2016* **III Dark Matter Day in São Paulo** at IFT-UNESP/ICTP-SAIFR, São Paulo (Brazil).
“*Dark Matter Distribution in the Galactic Bulge*”
- June 2016* **School on Dark Matter** at IFT-UNESP/ICTP-SAIFR, São Paulo (Brazil).
“*Dark Matter Distribution in the Milky Way: a Departure from Classical Analyses*”.

POSTERS

- July 2017* **IAU Symposium 334 Rediscovering our Galaxy** at Telegrafenberg, Potsdam (Germany).
“*An Estimate of the Dark Matter Profile in the Galactic Bulge Region*”

PUBLICATIONS

Benito, M., Bernardos, M.I, Fedorova, E., Iocco, F., Karukes, E., Mangano, S., & Sergijenko, O.,
“Characterization of the Large Magellanic Cloud at TeV energies, for CTA”, in prep.

Karukes, E.V., *Benito, M.*, Iocco, F., Trotta & R., Geringer-Sameth, A., “Bayesian Reconstruction of the Milky Way Dark Matter Distribution”, in prep.

Benito, M., Cuoco, A., Iocco, F., “Handling the Uncertainties in the Galactic Dark Matter Distribution for Particle Dark Matter Searches”, in prep.

Negrelli, C., *Benito, M.*, Landau, S., Iocco, F., & Kraiselburd, L. (2018). “Testing modified gravity theory in the Milky Way”. *Physical Review D*, 98(10), 104061. [[arxiv: 1810.07200](https://arxiv.org/abs/1810.07200)]

Iocco, F., & Benito, M. (2017). “An estimate of the DM profile in the Galactic bulge region”. *Physics of the Dark Universe*, 15, 90-95. [[arxiv: 1611.09861](#)]

Benito, M., Bernal, N., Bozorgnia, N., Calore, F., & Iocco, F. (2017). “Particle Dark Matter constraints: the effect of Galactic uncertainties”. *Journal of Cosmology and Astroparticle Physics*, 2017(02), 007. [[arxiv: 1612.02010](#)]

PROFESSIONAL MEMBERSHIPS

- Member of the CTA collaboration (since January 2017)

TECHNICAL SKILLS

- **Data Analysis:** γ -ray data analysis with CTOOLS; DS9, CLUMPY.
- **Programming:**
 - Experienced: PYTHON, C++, Unix OS, Bash Shell, \LaTeX .
 - Familiar: C, Mathematica, MATLAB.
 - Encountered: Fortran90, HTML.

LANGUAGES

- Mother tongue: Spanish
- Fluent: English, Portuguese
- Basics: German, Libras

OTHER INTERESTS

I like sports, especially swimming.