

MARÍA BENITO

PERSONAL INFORMATION

Born on 1989, in Asturias, Spain.

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EDUCATION

- 2015 - 2019* **Instituto de Física Teórica, Universidade Estadual Paulista, São Paulo (Brazil)**
PhD
Supervisor: Prof. Dr. Fabio Iocco
Title: *Dark Matter in the Milky Way: Uncertainties on its Distribution and Implications on its Particle Nature*
- 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. Galaxy formation and evolution. Alternative theories of gravity. Multi-messenger astronomy. Statistics.

FELLOWSHIPS & SCHOLARSHIPS

- 2015-2019* 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

- April 2019* Leibniz Institute for Astrophysics Potsdam (AIP), Potsdam (Germany).
- May, June 2018* DESY, Zeuthen (Germany).
- January 2018* CIEMAT, Madrid (Spain).
- July 2017* DESY, Zeuthen (Germany).

TALKS & SEMINARS

- April 2019* Talk at Leibniz Institute for Astrophysics Potsdam (AIP), Potsdam (Germany).
“Dark Matter in the Milky Way: Distribution, Uncertainties and the Impact for the Search of New Physics”
- March 2019* Seminar at University of Oslo, Oslo (Norway).
“Determining the Distribution of Dark Matter in the Milky Way”
- February 2019* **JSPS-FAPESP Workshop on Dark Energy, Dark Matter and Galaxies** at Universidade de São Paulo (USP), São Paulo (Brazil).
“Searching for New Physics (and Dark Matter): Implications of Uncertainties in the Determination of Dark Matter Distribution in the Milky Way”
- 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 Λ CDM 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”. Under collaboration review.

Karukes, E.V., *Benito, M.*, Iocco, F., Trotta & R., Geringer-Sameth, A., “Bayesian Reconstruction of the Milky Way Dark Matter Distribution”. Submitted to JCAP. [arxiv: 1901.02463]

Benito, M., Cuoco, A., Iocco, F., “Handling the Uncertainties in the Galactic Dark Matter Distribution for Particle Dark Matter Searches”. Journal of Cosmology and Astroparticle Physics, 2019(03), 033. [arxiv: 1901.02460]

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]

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, L^AT_EX.
 - Familiar: C, Mathematica, IDL, MATLAB.
 - Encountered: Fortran90, MPI, HTML.

LANGUAGES

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

OTHER INTERESTS

I like sports, especially swimming, and I love cooking.