

# MARÍA BENITO

## PERSONAL INFORMATION

Born on 1989, in Asturias, Spain.

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🌐 [mariabenitocst.github.io](https://mariabenitocst.github.io)

## EDUCATION

- 2015-Present*    **Instituto de Física Teórica, Universidade Estadual Paulista, São Paulo (Brazil)**  
*Expected Feb. 2019*    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, distribution of Dark Matter in the Milky Way. Galaxy formation and evolution. Alternative theories of gravity.  $\gamma$ -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 &amp; 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”. [[arxiv: 1901.02463](#)]

*Benito, M.*, Cuoco, A., Iocco, F., “Handling the Uncertainties in the Galactic Dark Matter Distribution for Particle Dark Matter Searches”. [[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:**  $\gamma$ -ray data analysis with CTOOLS; DS9, CLUMPY.
- **Programming:**
  - Experienced: PYTHON, C++, Unix OS, Bash Shell,  $\text{\LaTeX}$ .
  - Familiar: C, Mathematica, MATLAB.
  - Encountered: Fortran90, HTML.

## LANGUAGES

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

## OTHER INTERESTS

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