



Cofinanciado por la Unión Europea



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CURRICULUM VITAE (CVA)

IMPORTANTE –El Curriculum Vitae no puede exceder 4 páginas. Las instrucciones de cumplimentación están disponibles en la web

Parte A. Información Personal

fecha

Feb. 2024

Nombre	Mar		
Apellidos	Bastero Gil		
e-mail		URL Web	
Open Researcher and Contributor ID (ORCID) (*)			0000-0001-9962-5905

A.1. Categoría Actual

Posición	Catedrática de Universidad		
Fecha inicial	Mayo 2022		
Institución	Universidad de Granada		
Departamento/Centro	Departamento de Física Teórica y del Cosmos		
País	España	Phone number	+
Keywords	Cosmology, inflation, primordial spectrum, particle physics		

A.2. Categorías anteriores

Period	Position/Institution/Country/Cause of the interruption
Nov. 2010- April 2022	Associate Professor, University of Granada, Spain
Nov. 2008- Oct. 2010	PCD, University of Granada, Spain
Nov. 2003- Oct. 2008	Ramón y Cajal Researcher, University of Granada, Spain
Sept 2001- Sept. 2003	Postdoctoral research contract, Centre for Theoretical Physics, University of Sussex (U.K.) / end of contract
Oct. 2000 – Sept. 2001	INFN postdoctoral fellowship, Pisa (Italy)
Jun 1997 – Sept. 2000	Postdoctoral research contract, Physics Department, University of Southampton (UK)
Jan. 1995- Dec. 1996	Postdoctoral research fellowship (MEC), SISSA, Trieste (Italy)/ end of fellowship

A.3. Educación

PhD, Graduate Degree	Universidad/País	Year
Undergraduate, Physics	UAM, Madrid, Spain	1989
PhD in Physics	UAM, Madrid, Spain	1994

Part B. CV SUMMARY (max. 5000 characters, including spaces)



Dr. Mar Bastero-Gil has worked during her PhD and first postdoc on the phenomenology of supersymmetric models and Grand Unification Models. While in Southampton, she started working on the cosmological aspects of particle physics models, and in particular on inflationary model building, together with Prof. S. King and collaborators. Afterwards, she did focus on the predictions for the primordial spectrum and observational consequences, and warm inflation models, but also on other cosmological aspects like dark energy and dark matter.

She has more than 65 publications in international journals with high impact factor (Q1), 6 of them with more than 100 citations, and 14 of them with more than 50 citations. The total no. of citations is 3575, with an h index of 37 (source: <http://inspirehep.net/>).

She visits regularly the Physics Department at the University of Edinburgh, and the LPSC in Grenoble, where she has her usual collaborators, and she has also done stays of 3-4 months at those Institutions. At present she is an affiliate member of the "Higgs Center" at the University of Edinburgh. She has participated in more than 10 research grants, like CPAN (CSD2007-00042), and has been the Principal Investigator of 6 of them (FIS200406823, FIS2007-63364, FIS2010-17395, FIS2016-78198-P, PID2019-1059436B-I00, PID2022-140831NB-I00). She has also being member of the local organising committee of different meetings & workshops celebrated in Granada, for example: "PLANCK 2019", "VI Meeting on Fundamenal Cosmology" (2018), "VIII Iberian Cosmology Meeting" (2013), "III Iberian Gravitational Waves Meeting" (2014), "Cosmology Meeting" (2005).

She works as referee for the journal: Physical Review D, Physical Review Letters, Physics Letters B, Classical and Quantum Gravity, European Physical Journal e International Journal of Modern Physics.

She is member of the "Spanish Society of Gravitation and Relativity", and from 2013 to 2016 she was the Secretary of the Society.

She actively participates in different outreach activities organised by the Faculty of Science (UGR) or other entities (CPAN), like for example: talks during the Science Week (November each year), general talks at Secondary Schools (UGR, CPAN), talks on the "Woman and Girl Science Day" (UGR), etc...

She has supervised 2 Doctoral thesis (Rafael Cerezo Balsera, UGR, 2015, Marta Subías Díaz-Blanco, April 2022, UGR).

She has 5 periods of 6-year research merits ("sexenios"), and 5 periods of 5-years teaching merits ("quinquenios").

Part C. MÉRITOS RELEVANTES

C.1. Publicaciones

- 1) Non-thermal moduli production during preheating in alpha-attractor inflation models, K. Alam, M. Bastero-Gil, K. Dutta and H. V. Ragavendra, JCAP11 (2023) 095 [arXiv:2303.17383 [astro-ph.CO]].
- 2) New solar x-ray constraints on keV axionlike particles, C. Beaufort, M. Bastero-Gil, T. Luce and D. Santos, Phys. Rev. D 108 (2023) L081302 [arXiv:2303.06968 [hep-ph]].
- 3) Parity violating gravitational waves at the end of inflation, M. Bastero-Gil and A. T. Manso, JCAP 08 (2023) 001 [arXiv:2209.15572 [gr-qc]].
- 4) Solar axions in large extra dimensions, Mar Bastero-Gil, Cyprien Beaufort, Daniel Santos, JCAP 10 (2021) 048 [2107.13337 [hep-ph]].
- 5) Gravity waves and primordial black holes in scalar warm little inflation, Mar Bastero-Gil, Marta Subías Díaz-Blanco, JCAP 12 (2021) 052 [2105.08045 [hep-ph]].
- 6) Dark photon dark matter from a rolling inflaton, Mar Bastero-Gil, José Santiago, Lorenzo Ubaldi, Roberto Vega-Morales, Mar Bastero-Gil (Granada U.), Jose Santiago (Granada U.), Lorenzo Ubaldi (SISSA, Trieste and INFN, Trieste), Roberto Vega-Morales (Granada U.), JCAP 02 (2022) 015 [2103.12145 [hep-ph]].
- 7) Supersymmetric ν -inflaton Dark Matter, Mar Bastero-Gil, António Torres Manso, JCAP 04 (2021) 037 [2011.10362 [hep-ph]].



- 8) Towards a reliable effective field theory of inflation, Mar Bastero-Gil, Arjun Berera, Rudnei O. Ramos, Joao G. Rosa, PLB813 (2021) 136055.
- 9) Reexamination of the warm inflation curvature perturbations spectrum, Mar Bastero-Gil, Arjun Berera, Jaime R. Calderón, JCAP 1907 (2019) 019.
- 10) Warm inflation within a supersymmetric distributed mass model, Mar Bastero-Gil, Arjun Berera, Rafael Hernández-Jiménez, João G. Rosa, Phys.Rev. D99 (2019) 103520.
- 11) Vector dark matter production at the end of inflation, Mar Bastero-Gil, Jose Santiago, Lorenzo Ubaldi, Roberto Vega-Morales, JCAP 1904 (2019) 015.
- 12) Dynamical and observational constraints on the Warm Little Inflaton scenario, Mar Bastero-Gil, Arjun Berera, Rafael Hernández-Jiménez, João G. Rosa, Phys.Rev. D98 (2018) 083502.
- 13) Adiabatic out-of-equilibrium solutions to the Boltzmann equation in warm inflation, Mar Bastero-Gil, Arjun Berera, Rudnei O. Ramos, Joao G. Rosa, JHEP 1802 (2018) 063.
- 14) Constraining Warm Inflation with CMB data, Mar Bastero-Gil, Sukannya Bhattacharya, Koushik Dutta, Mayukh Raj Gangopadhyay, JCAP 1802 (2018) 054.
- 15) The role of fluctuation-dissipation dynamics in setting initial conditions for inflation, Mar Bastero-Gil, Arjun Berera, Robert Brandenberger, Ian G. Moss, Rudnei O. Ramos, Joao G. Rosa, JCAP 1801 (2018) 002.
- 16) Warm Little Inflaton, Mar Bastero-Gil, Arjun Berera, Rudnei O. Ramos, Joao G. Rosa, Phys.Rev.Lett. 117 (2016) 151301.
- 17) Inflaton dark matter from incomplete decay, Mar Bastero-Gil, Rafael Cerezo, Joao G. Rosa, Phys.Rev. D93 (2016) 103531.
- 18) Theory of non-Gaussianity in warm inflation, Mar Bastero-Gil, Arjun Berera, Ian G. Moss, Rudnei O. Ramos, JCAP 1412 (2014) 008.
- 19) Observational implications of mattergenesis during inflation, Mar Bastero-Gil, Arjun Berera, Rudnei O. Ramos, João G. Rosa, JCAP 1410 (2014) 053.
- 20) Cosmological fluctuations of a random field and radiation fluid, Mar Bastero-Gil, Arjun Berera, Ian G. Moss, Rudnei O. Ramos, JCAP 1405 (2014) 004.
- 21) The importance of being warm (during inflation), Sam Bartrum, Mar Bastero-Gil, Arjun Berera, Rafael Cerezo, Rudnei O. Ramos, Joao G. Rosa, Phys.Lett. B732 (2014) 116.

C.2. Congressos

Title: “Cosmic inflation: from CMB scales to reheating”, (**plenary invited talk**)

“Theoretical Particle Cosmology in the Early and Late Universe” MITP/EISA workshop, Corfu (Greece), 1-5 May 2023.

Title: “News from warm inflation”, (**plenary invited talk**)

Spanish-Portuguese Relativity Meeting (EREP 2022), Salamanca (Spain), 29/08-2/09 2022.

Title: What’s new in warm inflation (**plenary invited talk**),

APPS-DACG Workshop 2021 on Astrophysics, Cosmology and Gravitation, Asian Pacific Center for Theoretical Physics (online), 04/10-08/10 2021.

Title: Vector Dark Matter production at the end of inflation,

23rd annual International Conference on Particle Physics and Cosmology (COSMO-19), Aachen (Germany), 02/09-06/09 2019.

Title: Little Warm Inflation (**invited talk**),

Workshop on the Standard Model and beyond, Corfu (Greece), 31/08-09/09 2018. **Title:**

Adiabatic out-of-equilibrium solutions to the Boltzmann equation,

Workshop “13th Iberian Cosmology Meeting”, Lisbon, 26/03-28/03 2018.

Title: Inflation and the initial condition problem; the role of fluctuation-dissipation dynamics,

Workshop “21st annual International Conference on Particle Physics and Cosmology (COSMO-17)”, Paris, 28/08-1/09 2017.

Title: Initial conditions for inflation: the role of fluctuation-dissipation dynamics,

Workshop “12th Iberian Cosmology Meeting”, Valencia (España), 10/04-12/04 2017.

Title: Little warm inflation (**invited talk**),



workshop “III Saha Theory Workshop: Aspects of Early Universe Cosmology”, Kolkata (India), 16/01/2017-20/01/2017.

Title: Little Warm Inflation (**invited talk**),

“Exploring the Energy Ladder of the Universe”, MITP, Mainz, Germany, 29/05-11/06 2016.

Title: Cosmology: Theory (plenary, invited),

“XLIV International Meeting on Fundamental Physics”, IFT, Madrid (Spain), 04/04-07/04 2016.

Title: Dissipation during inflation: warm inflation after Planck (**invited talk**),

“Modern Cosmology: Early Universe, CMB and LSS, Benasque (Spain) 03/08-17/08 2014

C.3. Proyectos de investigación

* Title: “Effective theories of Cosmology and Gravity” (PID2022-140831NB-I00)

PI: Mar Bastero Gil

Funding agency: MICINN; Sept. 2023- Aug. 2026. 27.300 euros

* Title: “Effective theories of Cosmology and Gravity” (PID2019-1059436B-I00)

PI: Mar Bastero Gil

Funding agency: MICINN; Jun 2020- May 2023. 38.720 euros.

* Title: “Search of BSM physics at different energy scales: theoretical and experimental aspects” (A-FQM-211-UGR-18)

PI: José Santiago

Funding Agency: Junta de Andalucía, January 2020- December 2021, 15.400 euros

* Title: Particle and Astroparticle Physics at the University of Granada (SOMM/17/6104/UGR)

PI: Antonio Bueno Villar

Funding Agency: Junta de Andalucía, January 2018- December 2020, 880.000 euros

* Title: “Effective theories of Cosmology and Gravity” (FIS2016-78198-P);

PI: Mar Bastero Gil

Funding agency: MINECO; January 2017- December 2019. 32.500 euros.

* Title: “Effective theories of Cosmology and Gravity” (PP2015-03).

PI: Mar Bastero Gil

Funding agency: University of Granada; January 2016- December 2016. 2575 euros. * Title: “String inspired effective theories of gravity: cosmological implications and phenomenological predictions” (FIS2010-17395).

PI: Mar Bastero Gil

Funding agency: MICINN; January 2011- December 2013. 19360 euros.

* Title: “String inspired effective theories of gravity: cosmological implications and phenomenological predictions” (FIS2007-63364).

PI: Mar Bastero Gil

Funding agency: MEC; October 2007- September 2010. 48400 euros.

* Title: “String inspired effective theories of gravity and cosmology, and phenomenological predictions” (FIS2004-06823).

PI: Mar Bastero Gil

Funding agency: MEC; 13/12/2004 – 12/12/2007. 17020 euros.

C.4. Transferencia del Conocimiento, C.5 Otras publicaciones

* “Schwinger dark matter production”, M. Bastero-Gil, P. B. Ferraz, L. Ubalde and R. Vega-Morales, [arXiv:2312.15137 [hep-ph]].

* “Super heavy dark matter from inflationary Schwinger production”, M. Bastero-Gil, P. B. Ferraz, L. Ubalde and R. Vega-Morales, [arXiv:2311.09475 [hep-ph]].

* “Directional detection of meV dark photons with Dandelion”, C. Beaufort, M. Bastero-Gil, A. Catalano, D. S. Erfani-Harami, O. Guillaudin, D. Santos, S. Savorgnano and F. Vezzu, [arXiv:2310.16505 [physics.ins-det]].