

Valerio MARRA – Curriculum Vitae

August 1, 2018

Center for Astrophysics and Cosmology
& Physics Department
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ResearcherID: researcherid.com/rid/H-3974-2012

Citizenship: Italian
Languages: Italian (native), English (fluent), Portuguese (fluent)

Main Areas of Research

Theoretical Cosmology – Dark Energy and Dark Matter – Gravitational Lensing – Inhomogeneous Cosmological Models – Data Analysis – Astrophysics of Galaxies – Physics beyond the Standard Model

Education

Department of Physics, University of Padova, Italy.
Ph.D. in Physics, January 2005 – December 2007; graduation: March 14, 2008.
Thesis: *A Back-Reaction Approach to Dark Energy* (128 pages), [arXiv:0803.3152](https://arxiv.org/abs/0803.3152).
Advisor: Prof. Sabino Matarrese, Prof. Antonio Masiero.

Department of Physics, University of Padova, Italy.
Master's degree (Laurea V.O.) in Physics, October 1999 – October 2004; graduation: October 12, 2004.
Thesis: *Fundamental constants and their variation induced by a cosmological scalar* (115 pages, in Italian).
Advisors: Prof. Antonio Masiero, Dr. Francesca Rosati. Final grade: 110/110 magna cum laude.

Present Position

Physics Department, Federal University of Espírito Santo, Brazil.
Assistant Professor (Professor Adjunto), November 10, 2014 – present day.
Head of the UFES undergraduate distance-learning course ([EAD](#)) in Physics, March 2018 – present day.
Member of the graduate programs [PPGCosmo](#) and [PPGFis](#).

Previous Positions

Physics Institute, Federal University of Rio de Janeiro, Brazil.
“Science without Borders” Fellow, April 1, 2014 – October 31, 2014.
Group leader: Prof. Ioav Waga.

Institute for Theoretical Physics, Heidelberg University, Germany.
Postdoctoral Fellow, October 1, 2011 – March 31, 2014.
Group leader: Prof. Luca Amendola.

Department of Physics, University of Jyväskylä, Finland and
Helsinki Institute of Physics, University of Helsinki, Finland.
Postdoctoral Fellow, October 1, 2008 – September 30, 2011.
Group leader: Prof. Kimmo Kainulainen.

Visiting Positions

Kavli Institute for Cosmological Physics (KICP), The University of Chicago, USA.
Visiting Postdoctoral Fellow, May-September 2008.
Collaboration with Prof. Edward W. Kolb.

Department of Astronomy and Astrophysics, The University of Chicago, USA.
Visiting Ph.D. Student, January-December 2007.
Collaboration with Prof. Edward W. Kolb.

Valerio MARRA – Publications

August 1, 2018

I am author of 35 Refereed Publications in the field of cosmology and astrophysics. According to inSPIRE (inspirehep.net/author/V.Marra.1), I have about 1200+ citations and my h-index is 20. I have 3 papers with 100+ citations and 5 papers with 50+ citations. I published 1 paper in *Nature Astronomy* [2], 2 papers in *Physical Review Letters* [28, 20], and 1 paper in *Monthly Notices of the Royal Astronomical Society Letters* [17].

Refereed Publications in Journals

- [1] D. Camarena and V. Marra, *The impact of the cosmic variance on H_0 on cosmological analyses*, *Phys. Rev.* **D98** (2018) 023537, [arXiv:1805.09900](https://arxiv.org/abs/1805.09900) [[astro-ph.CO](#)].
- [2] D. C. Rodrigues, V. Marra, A. del Popolo, and Z. Davari, *Absence of a fundamental acceleration scale in galaxies*, *Nat. Astron.* (2018) , [arXiv:1806.06803](https://arxiv.org/abs/1806.06803) [[astro-ph.GA](#)].
- [3] L. Amendola *et al.*, *Cosmology and fundamental physics with the Euclid satellite*, *Living Rev. Rel.* **21** (2018) no. 1, 2, [arXiv:1606.00180](https://arxiv.org/abs/1606.00180) [[astro-ph.CO](#)].
- [4] V. Marra and D. Sapone, *Null tests of the standard model using the linear model formalism*, *Phys. Rev.* **D97** (2018) no. 8, 083510, [arXiv:1712.09676](https://arxiv.org/abs/1712.09676) [[astro-ph.CO](#)].
- [5] R. C. Batista and V. Marra, *Clustering dark energy and halo abundances*, *JCAP* **1711** (2017) no. 11, 048, [arXiv:1709.03420](https://arxiv.org/abs/1709.03420) [[astro-ph.CO](#)].
- [6] D. C. Rodrigues, A. del Popolo, V. Marra, and P. L. C. de Oliveira, *Evidence against cuspy dark matter haloes in large galaxies*, *Mon. Not. Roy. Astron. Soc.* **470** (2017) no. 2, 2410–2426, [arXiv:1701.02698](https://arxiv.org/abs/1701.02698) [[astro-ph.GA](#)].
- [7] D. C. Torres and V. Marra, *Cosmological constraints on the radiation released during structure formation*, *Eur.Phys.J.C* **76** (2016) 644, [arXiv:1608.08824](https://arxiv.org/abs/1608.08824) [[astro-ph.CO](#)].
- [8] T. Castro, V. Marra, and M. Quartin, *Constraining the halo mass function with observations*, *Mon.Not.Roy.Astron.Soc.* **463** (2016) 1666–1677, [arXiv:1605.07548](https://arxiv.org/abs/1605.07548) [[astro-ph.CO](#)].
- [9] V. Marra, *Coupling dark energy to dark matter inhomogeneities*, *Phys.Dark Univ.* **13** (2016) 25–29, [arXiv:1506.05523](https://arxiv.org/abs/1506.05523) [[astro-ph.CO](#)].
- [10] K. Yamamoto, V. Marra, V. Mukhanov, and M. Sasaki, *Perturbed Newtonian description of the Lemaitre model with non-negligible pressure*, *JCAP* **1603** (2016) no. 03, 030, [arXiv:1512.04240](https://arxiv.org/abs/1512.04240) [[gr-qc](#)].
- [11] L. Amendola, T. Castro, V. Marra, and M. Quartin, *Constraining the growth of perturbations with lensing of supernovae*, *Mon.Not.Roy.Astron.Soc.* **449** (2015) 2845–2852, [arXiv:1412.3703](https://arxiv.org/abs/1412.3703) [[astro-ph.CO](#)].
- [12] A. Piloyan, V. Marra, M. Baldi, and L. Amendola, *Linear Perturbation constraints on Multi-coupled Dark Energy*, *JCAP* **1402** (2014) 045, [arXiv:1401.2656](https://arxiv.org/abs/1401.2656) [[astro-ph.CO](#)].
- [13] W. Valkenburg, M. Kunz, and V. Marra, *Intrinsic uncertainty on the nature of dark energy*, *Phys.Dark Univ.* **2** (2013) 219–223, [arXiv:1302.6588](https://arxiv.org/abs/1302.6588) [[astro-ph.CO](#)].
- [14] C. Heneka, V. Marra, and L. Amendola, *Extensive search for systematic bias in SN Ia data*, *Mon.Not.Roy.Astron.Soc.* **439** (2014) 1855–1864, [arXiv:1310.8435](https://arxiv.org/abs/1310.8435) [[astro-ph.CO](#)].
- [15] M. Quartin, V. Marra, and L. Amendola, *Accurate weak lensing of standard candles. II. Measuring σ_8 with Supernovae*, *Phys.Rev.* **D89** (2014) 023009, [arXiv:1307.1155](https://arxiv.org/abs/1307.1155) [[astro-ph.CO](#)].

- [16] I. Sawicki, V. Marra, and W. Valkenburg, *Seeding supermassive black holes with a nonvortical dark-matter subcomponent*, *Phys.Rev.* **D88** (2013) 083520, [arXiv:1307.6150 \[astro-ph.CO\]](#).
- [17] W. Valkenburg, V. Marra, and C. Clarkson, *Testing the Copernican principle by constraining spatial homogeneity*, *Mon.Not.Roy.Astron.Soc.* **L** (2013) , [arXiv:1209.4078 \[astro-ph.CO\]](#).
- [18] V. Marra, M. Quartin, and L. Amendola, *Accurate weak lensing of standard candles. I. Flexible cosmological fits*, *Phys.Rev.* **D88** (2013) 063004, [arXiv:1304.7689 \[astro-ph.CO\]](#).
- [19] A. Piloyan, V. Marra, M. Baldi, and L. Amendola, *Supernova constraints on multi-coupled dark energy*, *JCAP* **1307** (2013) 042, [arXiv:1305.3106 \[astro-ph.CO\]](#).
- [20] V. Marra, L. Amendola, I. Sawicki, and W. Valkenburg, *Cosmic Variance and the Measurement of the Local Hubble Parameter*, *Phys.Rev.Lett.* **110** (2013) 241305, [arXiv:1303.3121 \[astro-ph.CO\]](#).
- [21] V. Marra, M. Paakkonen, and W. Valkenburg, *Uncertainty on w from large-scale structure*, *Mon.Not.Roy.Astron.Soc.* **431** (2013) 1891–1902, [arXiv:1203.2180 \[astro-ph.CO\]](#).
- [22] L. Amendola, V. Marra, and M. Quartin, *Internal Robustness: systematic search for systematic bias in SN Ia data*, *Mon.Not.Roy.Astron.Soc.* **430** (2013) 1867–1879, [arXiv:1209.1897 \[astro-ph.CO\]](#).
- [23] V. Marra and M. Paakkonen, *Exact spherically symmetric inhomogeneous model with n perfect fluids*, *JCAP* **1201** (2012) 025, [arXiv:1105.6099 \[gr-qc\]](#).
- [24] V. Marra and A. Notari, *Observational constraints on inhomogeneous cosmological models without dark energy*, *Class.Quant.Grav.* **28** (2011) 164004, [arXiv:1102.1015 \[astro-ph.CO\]](#).
- [25] K. Kainulainen and V. Marra, *Weak lensing observables in the halo model*, *Phys.Rev.* **D84** (2011) 063004, [arXiv:1101.4143 \[astro-ph.CO\]](#).
- [26] K. Kainulainen and V. Marra, *Accurate modeling of weak lensing with the stochastic gravitational lensing method*, *Phys.Rev.* **D83** (2011) 023009, [arXiv:1011.0732 \[astro-ph.CO\]](#).
- [27] V. Marra and M. Paakkonen, *Observational constraints on the Λ LTB model*, *JCAP* **1012** (2010) 021, [arXiv:1009.4193 \[astro-ph.CO\]](#).
- [28] L. Amendola, K. Kainulainen, V. Marra, and M. Quartin, *Large-Scale Inhomogeneities May Improve the Cosmic Concordance of Supernovae*, *Phys.Rev.Lett.* **105** (2010) 121302, [arXiv:1002.1232 \[astro-ph.CO\]](#).
- [29] K. Kainulainen and V. Marra, *New stochastic approach to cumulative weak lensing*, *Phys.Rev.* **D80** (2009) 123020, [arXiv:0909.0822 \[astro-ph.CO\]](#).
- [30] K. Kainulainen and V. Marra, *Supernovae observations in a “meatball” universe with a local void*, *Phys.Rev.* **D80** (2009) 127301, [arXiv:0906.3871 \[astro-ph.CO\]](#).
- [31] E. W. Kolb, V. Marra, and S. Matarrese, *Cosmological background solutions and cosmological backreactions*, *Gen.Rel.Grav.* **42** (2010) 1399–1412, [arXiv:0901.4566 \[astro-ph.CO\]](#).
- [32] E. W. Kolb, V. Marra, and S. Matarrese, *Description of our cosmological spacetime as a perturbed conformal Newtonian metric and implications for the backreaction proposal for the accelerating universe*, *Phys.Rev.* **D78** (2008) 103002, [arXiv:0807.0401 \[astro-ph\]](#).
- [33] V. Marra, E. W. Kolb, and S. Matarrese, *Light-cone averages in a Swiss-cheese universe*, *Phys.Rev.* **D77** (2008) 023003, [arXiv:0710.5505 \[astro-ph\]](#).
- [34] V. Marra, E. W. Kolb, S. Matarrese, and A. Riotto, *Cosmological observables in a Swiss-cheese universe*, *Phys.Rev.* **D76** (2007) 123004, [arXiv:0708.3622 \[astro-ph\]](#).
- [35] V. Marra and F. Rosati, *Cosmological evolution of α driven by a general coupling with quintessence*, *JCAP* **0505** (2005) 011, [arXiv:astro-ph/0501515 \[astro-ph\]](#).

Publications in Conference Proceedings

- [36] C. Heneka, A. Posada, V. Marra, and L. Amendola, *Searching for bias and correlations in a Bayesian way - Example: SN Ia data*, in *Statistical Challenges in 21st Century Cosmology*, vol. 10 of *Proceedings of the International Astronomical Union*, pp. 19–21. 5, 2014.
- [37] V. Marra, *Gravitational lensing and parameter extraction from SNe catalogues*, in *45th Rencontres de Moriond, Cosmology Session*, J. D. Etienne Augé and J. T. T. Vâ, eds. Thê Giói Publisher, 2010.
- [38] K. Kainulainen and V. Marra, *Impact of cosmic inhomogeneities on SNe observations*, in *Invisible Universe International Conference*, J.-M. Alimi and A. Fuözfa, eds., vol. 1241, pp. 1043–1050. 2010. [arXiv:0911.5584](#) [astro-ph.CO].
- [39] V. Marra, *On cosmological observables in a swiss-cheese universe*, in *43rd Rencontres de Moriond, Cosmology Session*, Y. G.-H. Jacques Dumarchez and J. T. T. Ván, eds. Thê Giói Publisher, 2008. [arXiv:0805.4233](#) [astro-ph].

Refereed Publications in other fields














- [40] V. Marra, *Understanding Our Only Universe*, *Philosophy and Cosmology* **19** (2017) 50–54. http://ispcjournal.org/journals/2017-19/Marra_19.pdf.
- [41] L. Amendola, V. Marra, and M. Quartin, *The evolving perception of controversial movies*, *Palgrave Communications* **1** (2015) 15038, [arXiv:1512.07893](#) [physics.soc-ph].

Valerio Marra

<https://publons.com/a/1329944>

Peer Review Summary

Performed 41 reviews for journals including *Physical Review Letters* and *Physics of the Dark Universe*, placing in the 95th percentile for verified review contributions on Publons up until June 2018.

	2	Physical Review Letters
	4	Physics of the Dark Universe
	1	The European Physical Journal C
	2	Monthly Notices of the Royal Astronomical Society
	2	Physics Letters B
	5	Journal of Cosmology and Astroparticle Physics
	17	Physical Review D
	3	Classical and Quantum Gravity
	1	International Journal of Modern Physics D
	1	Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences
	1	General Relativity and Gravitation
	1	Universe
	1	Aeronautics and Aerospace Open Access Journal
