



Tiago Batalha de Castro

Curriculum Vitae

Education

- 2014–2018 **PhD in Physics**, FEDERAL UNIVERSITY OF RIO DE JANEIRO, Area: Cosmology, Advisor: Miguel Quartin.
On the Robustness of Λ CDM: data mining tests and cross-checks.
- 2012–2014 **Masters degree in Physics**, FEDERAL UNIVERSITY OF RIO DE JANEIRO, Area: Cosmology, Advisor: Miguel Quartin.
On lensing effect in supernovae data.
- 2011–2012 **Scientific Initiation**, FEDERAL UNIVERSITY OF RIO DE JANEIRO, Advisor: Miguel Quartin.
On Monte Carlo Markov Chain.
- 2008–2012 **Bachelor in Physics**, FEDERAL UNIVERSITY OF RIO DE JANEIRO.

Masters Dissertation

- Title *On lensing effects in supernovae data*
Advisor Prof. Miguel Quartin
Link <https://www.dropbox.com/s/2jmnngo3b644yzkw/dissert.pdf?dl=0>
(In portuguese)

Ph.D. Thesis

- Title *On the Robustness of Λ CDM: data mining tests and cross-checks*
Advisor Prof. Miguel Quartin
Link <https://www.dropbox.com/s/imvt0g3i4lbdmup/tese.pdf?dl=0>

Experience

Teaching

- 2015–2016 **Temporary Professor of Physics**, FEDERAL UNIVERSITY OF RIO DE JANEIRO.
Undergraduate courses: Physics I (2015-1), Physics II (2015-2).

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- 2014 **Teaching Assistant**, FEDERAL UNIVERSITY OF RIO DE JANEIRO.
Computational Methods of Theoretical Physics on C (2014-1), Experimental Physics I (2014-2).
- 2011–2012 **Teaching Assistant**, FEDERAL UNIVERSITY OF RIO DE JANEIRO.
Computational Methods of Theoretical Physics on C (2011–2012).

Research

- 2016 – **Full member of J-PAS collaboration.**
Present Cluster cosmology Working group.
- 2016 – 2017 **PhD visiting student on Professor's Stefano Borgani group.**
INAF - Astronomical Observatory of Trieste

Awards and Grants

- 2016 Science without borders Ph.D. sandwich fellowship, CNPQ
- 2017 Doutorado Nota 10, Ph.D. excellence fellowship, FAPERJ

Media and Public Outreach

- 2014 The Letter by Castro et al. (2014) addressing the effects of gravitational lensing in supernovae data was discussed in the Pesquisa Fapesp journal (<http://revistapesquisa.fapesp.br/en/2014/09/24/cosmic-magnifying-lenses/>)

Computer skills

PYTHON, C/C++, Mathematica, Bayesian Statistics Techniques (including MCMC and Nested Sampling)

Languages

- English Fluent
- Italian Intermediate
- Portuguese Native language

Academic Articles

Published

- 2016 **T. Castro, M. Quartin, S. Benitez-Herrera**, *Turning noise into signal: Learning from the scatter in the Hubble diagram*, Physics of the Dark Universe, Volume 13, September 2016, Pages 66–76.
Cited by 4 records
- 2016 **T. Castro, V. Marra, M. Quartin**, *Constraining the halo mass function with observations*, Monthly Notices of the Royal Astronomical Society, Volume 463, Issue 2, Pages 1666-1677.
Cited by 4 records

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2015 **L. Amendola, T. Castro, V. Marra, M. Quartin**, *Constraining the growth of perturbations with lensing of supernovae*, Monthly Notices of the Royal Astronomical Society, Volume 449, Issue 3, Pages 2845-2852.

Cited by 11 records

2014 **T. Castro, M. Quartin**, *First measurement of σ_8 using supernovae magnitudes only*, Monthly Notices Letters of the Royal Astronomical Society, Volume 443, Issue 1, L6–L10.

Cited by 14 records

According to INSPIRE, I have 33 citations and my h-index is 4

<http://inspirehep.net/author/profile/T.Castro.1>.

Submitted

2017 **T. Castro, M. Quartin, C. Giocoli, S. Borgani, K. Dolag**, *The effect of baryons in the cosmological lensing PDFs*, Monthly Notices of the Royal Astronomical Society, <https://arxiv.org/abs/1711.10017>.

In preparation

2017 **T. Castro, S. Borgani**, *On baryonic effects on the linear halo bias*.

2017 **T. Castro, C. Giocoli, M. Quartin, V. Marra**, *Fast Strong Gravitational Lensing Simulations.*, Ongoing project on the Brazilian Santos Dumont Supercomputer.

Scientific Research Proposals

2017 **V. Marra, L. Casarini, T. Castro, M. Quartin**, *Crescimento de estruturas em um model cosmológico com inomogeneidades em grandes escalas.*, Submitted to the Brazilian Santos Dumont Supercomputer committee.

Editorial Services (referee)

I serve as referee for Monthly Notices of Royal Astronomical Society

Short Course Taught

2017 Short Course on PYTHON at Federal University of Espírito Santo

Presentations at conferences

Oral presentations

2016 T. Castro, V. Marra, M. Quartin *Halo Mass Function from observations*. 13th J-PAS Meeting.

2016 T. Castro, S. Borgani, K. Dolag, C. Giocoli, M. Quartin *Magneticum Halo Bias and Lensing PDF*. Magneticum Day.

2014 T. Castro, M. Quartin *Weak lensing of standard candles: Concerning intrinsic variations and lensing signature*. XII Workshop Nova Física no Espaço.

2013 T. Castro, M. Quartin *Supernovae Constraints and the MCMC method for likelihood analysis*. XX XVIII Annual encounter of the Brazilian Astronomical Society (SAB).

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Participations in events

- 2017 SDUMONT Supercomputer School
- 2017 ICTP-Trieste/ICTP-SAIFR School on Open Problems in Cosmology
- 2017 XIX Swieca Summer School on Particles and Fields.
- 2016 Tenth TRR33 Winter School on Cosmology.
- 2016 Magneticum day.
- 2016 ICTP Summer School on Cosmology.
- 2016 Workshop on Cosmology with Next Generation Radio Surveys.
- 2016 Workshop on Perspectives on the Extragalactic Frontier: from Astrophysics to Fundamental Physics.
- 2016 13th J-PAS Collaboration Meeting.
- 2015 10th J-PAS Collaboration Meeting.
- 2015 1º Encontro brasileiro do J-PAS e A-PLUS.
- 2015 VI WORKSHOP CHALLENGES OF NEW PHYSICS IN SPACE.
- 2014 ICTP-Trieste/ICTP-SAIFR School and Workshop on Observational Cosmology.
- 2014 III Jayme Tiomno School of Cosmology.
- 2014 J-PAS/Theory Miniworkshop.
- 2014 XII Workshop Nova Física no Espaço.
- 2014 XX XVIII Encontro Anual da SAB.
- 2013 I Reunião Carioca de Cosmologia e Gravitação.
- 2013 USP conference on cosmology, large scale structure and first objects.
- 2013 V INPE Advanced Course on Astrophysics.
- 2013 XVIII Ciclo de Cursos Especiais do Observatório Nacional.
- 2013 II JAYME TIOMNO SCHOOL OF COSMOLOGY.

Curriculum Lattes

<http://lattes.cnpq.br/9859012378399854>

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Professional References

- Prof. Dr. **Miguel Quartin**, *Federal University of Rio de Janeiro, Rio de Janeiro, Brazil.*
e-mail:mquartin@if.ufrj.br phone: (+5521) 3938-7898
- Prof. Dr. **Valerio Marra**, *Federal University of Espiritos Santos, Espíritos Santos, Brazil.*
e-mail:valerio.marra@me.com phone: (+5527) 3335 7627
- Prof. Dr. **Stefano Borgani**, *Astronomical Observatory of Trieste, Trieste, Italy.*
e-mail:borgani@oats.inaf.it phone: +39-040-3199-240 (136)
- Prof. Dr. **Luca Amendola**, *University of Heidelberg, Heidelberg, Germany.*
e-mail:l.amendola@thphys.uni-heidelberg.de phone: +49-6221-549-407
- Dr. **Klaus Dolag**, *Max Planck Institute for Astrophysics, Garching, Germany.*
e-mail:kdolag@mpa-garching.mpg.de phone: +49-089-30000-2016
- Dr. **Carlo Giocoli**, *University of Bologna, Bologna, Italy.*
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