
Curriculum Vitae

Marco Raveri

Affiliation: SISSA/ISAS International School for Advanced Studies, Via Bonomea 265, 34136 Trieste (Italy)
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Personal Information

Name: Marco Raveri
Nationality: Italian
Date and place of birth: July 06th, 1987, Padova (PD), Italy
Home Address: Via Milano 7, 34122 Trieste (TS), Italy
Languages: Italian – Native speaker, English

Education

Ph.D. : Ph.D. Student in Astrophysics, Nov 2012 - Present
SISSA/ISAS International School for Advanced Studies,
Via Bonomea 265, 34136 Trieste (Italy)
Principal subject of Ph.D. Thesis: *Dark Energy and Modified Gravity phenomenology*
Supervisors: Carlo Baccigalupi (SISSA), Alessandra Silvestri (Instituut-Lorentz)

Master: Master in High Performance Computing, Oct 2014 - Present
SISSA/ISAS International School for Advanced Studies and
ICTP - Abdus Salam International Centre for Theoretical Physics,
Strada Costiera 11, 34151 Trieste (Italy)
Principal subject of Master Thesis: *Finite Element Simulations of Screening Mechanisms in Modified Gravity*
Supervisors: Luca Heltai (SISSA), Alessandra Silvestri (Instituut-Lorentz)

Undergraduate: Master Degree in Physics, July 2012
University of Padua,
Master Thesis: *General Relativistic Effects in Cosmological Large Scale Structure Formation*
Supervisors: Sabino Matarrese, Nicola Bartolo (UNIPD)

Bachelor Degree in Physics, July 2009
University of Padua,
Bachelor Thesis: *Dynamical Models for Dark Energy*
Supervisor: Sabino Matarrese (UNIPD)

Research Interests

- **Dark Energy and Modified Gravity phenomenology:** unifying frameworks*; parametrizations of deviations from General Relativity*; Large Scale Structure tests of gravity*; constraints on dark energy and modified gravity from various cosmological probes*;
- **Statistical and computational methods in cosmology:** model selection; data set concordance*; standardization of numerical tools and open source scientific software development*; high-performance computing*;
- **Observational cosmology:** forecasting*; synergies between cosmological probes*; cross-correlation between different measurements; CMB temperature and polarization measurements; gravitational lensing of the CMB; weak lensing surveys*;
- **Fundamental Physics:** effective field theories*; models of dark energy*; modified gravity theories*; Lorentz violations*;

(items with publications or project involvement are indicated with “*”)

Publications

Refereed Papers in Primary Journals:

- 6) Bin Hu, Marco Raveri, “*Can modified gravity models reconcile the tension between CMB anisotropy and lensing maps in Planck-like observations?*”, Phys. Rev. D **91**, no. 12, 123515 (2015) [arXiv:1502.06599 [astro-ph.CO]].
- 5) Bin Hu, Marco Raveri, Alessandra Silvestri, Noemi Frusciante, “*EFTCAMB/EFTCosmoMC: massive neutrinos in dark cosmologies*”, Phys. Rev. D **91**, 063524 (2015) [arXiv:1410.5807 [astro-ph.CO]].
- 4) Marco Raveri, Carlo Baccigalupi, Alessandra Silvestri, Shuang-Yong Zhou, “*Measuring the speed of cosmological gravitational waves*”, Phys. Rev. D **91**, 061501 (2015) [arXiv:1405.7974 [astro-ph.CO]].
- 3) Marco Raveri, Bin Hu, Noemi Frusciante, Alessandra Silvestri, “*Effective Field Theory of Cosmic Acceleration: constraining dark energy with CMB data*”, Phys. Rev. D **90**, 043513 (2014) [arXiv:1405.1022 [astro-ph.CO]].
- 2) Bin Hu, Marco Raveri, Noemi Frusciante, Alessandra Silvestri, “*Effective Field Theory of Cosmic Acceleration: an implementation in CAMB*”, Phys. Rev. D **89**, 103530 (2014) [arXiv:1312.5742 [astro-ph.CO]].
- 1) Noemi Frusciante, Marco Raveri, Alessandra Silvestri, “*Effective Field Theory of Dark Energy: a Dynamical Analysis*”, JCAP, Issue 02, 026, (2014) [arXiv:1310.6026 [astro-ph.CO]].

Papers Submitted to Primary Journals:

- 1) Marco Raveri, “*Is there concordance within the concordance Λ CDM model?*”, arXiv:1510.00688 [astro-ph.CO], submitted to Physical Review Letters.
- 2) Noemi Frusciante, Marco Raveri, Daniele Vernieri, Bin Hu, Alessandra Silvestri, “*Horava Gravity in the Effective Field Theory formalism: from cosmology to observational constraints*”, arXiv:1508.01787 [astro-ph.CO], submitted to Physics of the Dark Universe.

Other contributions:

- 1) Bin Hu, Marco Raveri, Noemi Frusciante, Alessandra Silvestri, “*EFTCAMB/EFTCosmoMC: Numerical Notes v1.1*”, arXiv:1405.3590 [astro-ph.IM], (2014).

Academic references

- Carlo Baccigalupi** Full Professor, Astrophysics Sector,
SISSA/ISAS International School for Advanced Studies,
Via Bonomea 265, 34136, Trieste (Italy).
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Homepage: <http://www.people.sissa.it/~bacci>.
- Alessandra Silvestri** Assistant Professor,
Instituut Lorentz,
Niels Bohrweg 2, Leiden, NL-2333 CA, (Netherlands).
e-mail: silvestri@lorentz.leidenuniv.nl, Office: 270, Phone: +31 71 527 5540,
Homepage: <http://wwwhome.lorentz.leidenuniv.nl/~silvestri/Home.html>
- Sabino Matarrese** Full Professor, Dept. of Physics and Astronomy,
University of Padua,
Via Marzolo 8, 35131, Padova (Italy).
e-mail: sabino.matarrese@unipd.it, Phone: +39 049 8277 120.
- Levon Pogosian** Associate Professor,
Simon Fraser University,
8888 University Drive, Burnaby, BC, V5A 1S6 (Canada).
e-mail: levon@sfu.ca, Phone: +1 (778) 782 7598,
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- Licia Verde** ICREA Professor,
Institute of Cosmological Sciences (ICC) UB-IEEC,
Martí i Franques 1, 08028, Barcelona (Spain).
e-mail: liciaverde@icc.ub.edu,
Homepage: <http://icc.ub.edu/~liciaverde/HomePage.html>
- Luca Heltai** Assistant Professor, Numerical Analysis
SISSA/ISAS International School for Advanced Studies,
Via Bonomea 265, 34136, Trieste (Italy).
e-mail: luca.heltai@sissa.it, Phone: +39 040 3787 449,
Homepage: <http://people.sissa.it/~heltai/>.

Other professional activities

- Member of EUCLID theory working group, 2015-present;
 - Referee for Physical Review D, 2015-present;
 - Member of the Italian Physical Society (SIF). 2012-present;
 - Member of the National Institute for Nuclear Physics (INFN). 2012-present;
 - Member of the National Institute for Astrophysics (INAF). 2012-present;
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Computer skills and competences

Languages: Fortran - C/C++ - Python.
Standard software: Office suite - OpenOffice suite - iWork suite - Photoshop - Illustrator - Indesign - L^AT_EX.
Scientific software: Mathematica and xAct packages - CAMB - CosmoMC - CLASS.
Developed software: EFTCAMB/EFTCosmoMC (<http://wwwhome.lorentz.leidenuniv.nl/~hu/codes/>).

Fellowships & Awards

2012 SISSA, Italy, Ph.D. Fellowship in Astrophysics curriculum.

Visited institutes

May 2015 **NAOC: National Astronomical Observatories, Chinese Academy of Sciences (China)**
 Talk: *“The Effective Field Theory Approach to Dark Energy Phenomenology”*
 Talk: *“Measuring the speed of cosmological gravitational waves”*

Feb. 2015 **Instituut-Lorentz for theoretical physics (Netherlands)**

Sept. 2014 **Instituut-Lorentz for theoretical physics (Netherlands)**
 Talk: *“Measuring the speed of cosmological gravitational waves”*

Partecipation in International conferences/workshops

07 - 12 Sept. 2015 Cosmo-15 (Warsaw)
 Contributed talk:
“The Effective Field Theory approach to modified gravity phenomenology”

08 - 12 June 2015 Euclid Consortium meeting (Lausanne)
 Contributed talk:
“Computation of CMB-LSS cross correlation spectra in EFT Cosmologies”

16 - 20 Feb. 2015 Extracting Information from Weak Lensing: Small Scales=Big Problem,
 Lorentz Center, Leiden (Netherlands)

1 - 5 Sept. 2014 Workshop on Experimental Search for Quantum Gravity, SISSA, Trieste (Italy)

18 - 21 Aug. 2014 Workshop on Cosmology from Baryons at High Redshift, ICTP, Trieste (Italy)

14 - 18 July 2014 Non-Linear Structure in the Modified Universe, Lorentz Center, Leiden (Netherlands)

14 - 17 Oct. 2013 Dark Side of the Universe 2013 IX International Workshop, SISSA, Trieste (Italy)

8 - 11 Oct. 2013 Workshop on Galaxy Bias: Non-linear, Non-local and Non-Gaussian,
 ICTP, Trieste (Italy)

29 July -2 Aug. 2013 Workshop on New Light in Cosmology from CMB, ICTP, Trieste (Italy)

30 July -2 Aug. 2012 Workshop on Large Scale Structure, ICTP, Trieste (Italy)

Schools attended

4 - 15 Aug. 2014	Summer School on Cosmology, ICTP, Trieste (Italy)
1 - 6 Dec.r 2013	Seventh TRR33 Winter School Passo del Tonale (Italy)
15 - 20 Sept. 2013	School of Astrophysics Francesco Lucchin, Gaeta (Italy)
22 - 26 July 2013	School on New Light in Cosmology from CMB, ICTP, Trieste (Italy)
16 - 27 July 2012	Summer School on Cosmology, ICTP, Trieste (Italy)

Poster presentations

14 - 18 July 2014	Title: <i>Effective Field Theory of Cosmic Acceleration: an implementation in CAMB</i> (based on B. Hu, M. Raveri, N. Frusciante and A. Silvestri, Phys. Rev. D 89, 103530 (2014)), Non-Linear Structure in the Modified Universe, Lorentz Center, Leiden (Netherlands)
14 - 18 July 2014	Title: <i>Effective Field Theory of Cosmic Acceleration: constraining dark energy with CMB data</i> (based on M. Raveri, B. Hu, N. Frusciante, A. Silvestri, arXiv:1405.1022 [astro-ph.CO], (2014)), Non-Linear Structure in the Modified Universe, Lorentz Center, Leiden (Netherlands)

Talks

- COSMO-15 (Warsaw).
Contributed talk: *“The Effective Field Theory approach to modified gravity phenomenology”*
 - Euclid Consortium meeting (Lausanne).
Contributed talk: *“Computation of CMB-LSS cross correlation spectra in EFT Cosmologies”*
 - Seminars at NAOC: National Astronomical Observatories, Chinese Academy of Sciences (China).
Title of the talk: *“The Effective Field Theory Approach to Dark Energy Phenomenology”*
Title of the talk: *“Measuring the speed of cosmological gravitational waves”*
 - Invited lecturer to Virtual Institute of Astroparticle Physics.
Title of the talk: *Measuring the speed of cosmological gravitational waves;*
 - Seminar at the Instituut-Lorentz for theoretical physics (Netherlands).
Title of the talk: *Measuring the speed of cosmological gravitational waves.*
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Thursday 22nd October, 2015

MARCO RAVERI