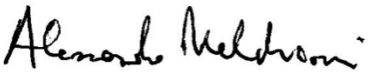

# CURRICULUM VITAE ET STUDIORUM at 03/11/2020

Ai fini della pubblicazione

Alessandro Melchiorri

## General Information

- *Name* :
  Alessandro Melchiorri
- *Present Position*:
  Associate Professor, FIS/05, Dipartimento di Fisica "G. Marconi", Universita' di Roma "La Sapienza".
- *Nationality*:
  Italian
- *Professional Address*:
  Universita' degli Studi di Roma Sapienza, Ple Aldo Moro 5, 00185, Roma, Italy.

## Education

1984-1989 Secondary School certificate at the State Secondary School (Liceo Classico) "Giulio Cesare" (Rome) with marks 60/60.

1990-1995 Undergraduate studies in Physics at the University of Rome "La Sapienza". Undergraduate research Thesis *"Cosmic Microwave Background Polarization"*, in the group of Prof. N. Vittorio. Graduated with marks 110/110 cum laude, 28/3/1996.

11/1997-10/2000 **Ph.D position in Astronomy** at the Physics Department of the University of Rome (Italy). Ph.D. thesis *"Theoretical Studies relative to Cosmic Background Anisotropies"* (Supervisor Prof. N. Vittorio) discussed the 20/3/2001.

## Research Activity

My research is mainly focused on theoretical cosmology and on the implications of the new measurements of Cosmic Microwave Background anisotropies on several aspects of fundamental physics as neutrino physics, dark matter, dark energy and general relativity. I have been part of large collaborations as BOOMERanG and Planck, playing a key role and coordinating several activities on the theoretical interpretation of the data. On the other hand, I have also pursued a more personal research, coordinating a small group of young (mainly PhD students) researchers in theoretical physics in Rome and collaborating with several international institutions.

## Appointments

**Short summary**: After a PPARC postdoctoral position in Oxford, I obtained a permanent lecturer position in Rome in 2002, and an associate professor position in 2015 at the same university. During and after the completition of my Ph.D. studies **I have spent more than** 5 **years in international institutions** in France, UK, Spain, Switzerland, USA and Mexico as invited Visiting Researcher or Professor.

### Permanent appointments

11/2002 - 10/2015 **Ricercatore (Lecturer)**, University of Rome "Sapienza".

10/2015 - present **Associate Professor**, University of Rome "Sapienza".

### Academic long-term ($\geq 2$ months) appointments

1997 - 1999 Academic host at the Physics Department, University of Geneva, Switzerland. Invited by Professor Ruth Durrer.

2000-2002 **Postdoctoral Fellow** at University of Oxford, UK. Fellowship awarded by the Particle Physics and Astronomy Research Council, UK.

April-May 2002 **Academic host** at the Dept. of Astrophysical Sciences Princeton University Princeton, USA. Invited by Professor David Spergel.

(11-12)/2007 **Scientific Associate**, CERN, Geneva, Switzerland.

(3-6)/2015 **Visiting Professor** (Invited by Professor Joseph Silk), IAP, Paris, France.

(9-12)/2015 **Visiting Professor** (Invited by Professor Benjamin Wandelt), IAP, Paris, France.

1/10/2017-30/9/2018 **Visiting Professor** (on Sabbatical leave), Alan Turing Physics Department, University of Manchester, UK.

### Academic short-term appointments

Nov 1999 Academic host at CITA, Canadian Institute of Theoretical Astrophysics, Toronto, Ontario, Canada. Invited by Prof. Richard J. Bond.

11/2004 Academic Host, Fermilab, invited by Prof. Rocky Kolb and Prof. Scott Dodelson.

3/2005 Academic Host, Caltech, Invited by Prof. Marc Kamionkowski.

10/2005 Academic Host, Cornell University, Invited by Prof. Rachel Bean.

(6-7)/2006 Academic Host, UNAM, Mexico, invited by Prof. Axel de La Macorra.

(7/8)/2009 Visiting Professor, University of California, Irvine, USA.

8/2010 Visiting Professor, University of California, Irvine, USA.

6/2011 Visiting Professor, University of California, Irvine, USA.

2/2012 Visiting Professor, UAM, University of Madrid, Madrid, Spain.

8/2012 Visiting Professor, Jet Propulsion Laboratory/NASA, Pasadena, California, USA.

8/2013 Visiting Professor, University of California, Irvine, USA.

9/2013 Visiting Professor, Kavli Institute, SLAC, Stanford, California, USA.

8/2015 Visiting Professor, SLAC, Stanford, California, USA.

### Other

1996-1997 Civil Service in substitution of the obligatory military service at the School "Centro Elis" (Rome).

## Teaching Experience

**Short summary**: Since 2005 I teach the undergraduate course in Physical Cosmology at the University of Rome Sapienza (with the exception of two academic years 2017-2018 and 2018-2019 since I was on Sabbatical leave) for a total of 13 courses and more than 700 hours of lectures. This course is mandatory for students graduating in Astronomy and Astrophysics. I also gave a 32 hours undergraduate course in Cosmology at the Autonoma university in Madrid, Spain. Since 2011 I also teach the undergraduate course in Astronomy for a total of 5 courses and 272 hours of lectures. I have been assistant to several basic courses in Physics at the Universities of Geneva and Rome. I gave also 5 fundamental courses in Physics for students graduating in Chemistry and Informatics in Rome (272 hours of lectures). I gave several Ph.D. lectures at the Universities of Rome and Salerno in Italy and at International schools in l'Aquila, Azores, London, Mexico, Milan, Oxford, Padova, Stanford, Stockholm, Palermo, Valencia, and Varenna (Fermi School).

1998 Assistant at the undergraduate course in Advanced Quantum Mechanics by prof. R. Casalbuoni, Physics Department, University of Geneva.

1999 Assistant at the undergraduate course in Electrodynamics 2 by prof. R. Durrer, Physics Department, University of Geneva.

1999 Assistant at the undergraduate course in Electrodynamics 1 by prof. A. G. Clark, Physics Department, University of Geneva.

2002-2005 Assistant at undergraduate courses in Physics (prof. P. Loverre, E. Massaro, L. Zanello,), University of Rome.

2002 Course on "CMB and Galaxy Clustering" (2 hours) at 9th Chalonge School in Astrofundamental Physics, Palermo, September 2002.

2002 Course on "CMB determination of the cold dark matter density" at the Supersymmetry and the Early Universe. Annual School and Mid-Term Review Meeting of the Fifth Framework, EC Network (HPRN-CT-2000-00152) Oxford, 26-29 September 2002.

2004-2005 20 hours Ph.D. course in Theoretical Cosmology, University of Rome.

2004-2005 20 hours Ph.D. course in Theoretical Cosmology, University of Salerno.

2004-2005 40 hours Undergraduate Course in Theoretical Cosmology, University of Rome.

2004-2005 4 hours Course on "Dark Matter and Dark Energy", International School on SZ Effect, Varenna, Lake Como, Italy, July, 2004.

2004-2005 4 hours Course on "CMB and Cosmological Parameters", School in Data Analysis and Cosmology, Valencia, September 6-11, 2004.

2005-2006 40 hours Undergraduate Course in Physical Cosmology, University of Rome.

2005-2006 60 hours Undergraduate Course in Physics I for Informatics, University of Rome.

2005-2006 20 hours Ph.D. course in Theoretical Cosmology, University of Rome.

2006-2007 40 hours Undergraduate Course in Physical Cosmology, University of Rome.

2006-2007 60 hours Undergraduate Course in Physics I for Informatics, University of Rome.

2006-2007 20 hours Ph.D. course in Theoretical Cosmology, University of Rome.

2007-2008 48 hours Undergraduate Course in Physical Cosmology, University of Rome.

2007-2008 60 hours Undergraduate Course in Physics I for Informatics, University of Rome.

2008-2009 48 hours Undergraduate Course in Physical Cosmology, University of Rome.

2008-2009 60 hours Undergraduate Course in Physics I for Chemistry, University of Rome.

2008-2009 10 hours Ph.D. course in Theoretical Cosmology, University of Rome.

2009 Lectures at the VIII Mexican School on Gravitation and Mathematical Physics "Speakable and unspeakable in gravitational physics", 7/12/2009, Mexico.

2009-2010 48 hours Undergraduate Course in Physical Cosmology, University of Rome.

2009-2010 36 hours Undergraduate Course in Physics I for Chemistry, University of Rome.

2009-2010 16 hours Ph.D. course in Theoretical Cosmology, University of Salerno, Italy.

2010 Lectures at the INFN School on “Neutrino Masses”, Padova 3-6 May 2010, Italy on “Neutrinos in Cosmology”.

2010-2011 48 hours Undergraduate Course in Physical Cosmology, University of Rome.

2011 Lectures at the Azores School on Observational Cosmology, in Angro do Heroismo, Azores, Portugal, on ”CMB constraints on fundamental physics”.

2011-2012 64 hours Undergraduate Course in Astronomy, University of Rome.

2012 32 hours Undergraduate Course in Cosmology, University of Madrid, Spain.

2011-2012 48 hours Undergraduate Course in Physical Cosmology, University of Rome.

2012-2013 64 hours Undergraduate Course in Astronomy, University of Rome.

2012-2013 48 hours Undergraduate Course in Physical Cosmology, University of Rome.

2012-2013 2 hours Ph.D. course at the ”NeXT Ph.D. Summer School”, Queen Mary University, London, UK.

2012-2013 1 hour Ph.D. lecture at the ”ISAPP 2013 Summer School”, Stockholm, Sweden.

2013-2014 48 hours Undergraduate Course in Physical Cosmology, University of Rome.

2013 2 hours lectures in ”Theory of the CMB” at the ”International School of Space Science”, ”Observing the Universe with the Cosmic Microwave Background”, l’Aquila, Italy, April 22-26, 2014.

2014-2015 48 hours Undergraduate Course in Astronomy, University of Rome.

2014-2015 48 hours Undergraduate Course in Physical Cosmology, University of Rome.

2015-2016 48 hours Undergraduate Course in Astronomy, University of Rome.

2015-2016 48 hours Undergraduate Course in Physical Cosmology, University of Rome.

10-21 Aug 2015 Stanford, USA, **2 Invited Lectures**, ”Neutrinos and Cosmology”

2016 4.5 hours lectures, Introduction to Cosmology, ISAPP2016 - International School of Astroparticle Physics,Physics and Astrophysics of Cosmic Rays in Space. Milano Bicocca, September 2016.

2016-2017 48 hours Undergraduate Course in Astronomy, University of Rome.

2016-2017 56 hours Undergraduate Course in Physical Cosmology, University of Rome.

2019-2020 60 hours Undergraduate Course in Astronomy, University of Rome.

2019-2020 60 hours Undergraduate Course in Physical Cosmology, University of Rome.

## Supervision of students

**Short summary:** I supervised at the University of Rome 7 **thesis** of type ”Quadriennale”, 66 **thesis** of type ”triennale”, and 46 **thesis** of type ”specialistica/magistrale”. I have been the supervisor of 22 **Ph.D. thesis** and I supervised 23 **Ph.D. students** and 5 **postdocs**. I have been in the panel of several international Ph.D. examinations.

### Laurea Quadriennale (Master Thesis)

- 1. (2003) Paolo Serra, 110/110
- 2. (2005) Tommaso Giannantonio 110/110 and laude
- 3. (2006) Michela Paganelli, 98/110
- 4. (2006) Irene Sorbera, 108/110
- 5. (2006) Barbara Paciello, 110/110
- 6. (2007) Attilio Dariol, 101/110
- 7. (2013) Paola Giammaria, 102/110

**Laurea Triennale (Graduate Thesis)**

- 1. (2004) Luca Pagano, 110/110 and laude
- 2. (2005) Francesco De Bernardis, 110/110 and laude
- 3. (2005) Roberta Camerini, 110/110 and laude
- 4. (2005) Mirko Pacifici, 105/110,
- 5. (2006) Manuela Venturi, 110/110 and laude
- 6. (2006) Chiara Melchiorre 100/110
- 7. (2006) Stefania Pandolfi 110/110 and Laude
- 8. (2006) Elena Giusarma 106/110
- 9. (2006) Valentina Mangano 110/110
- 10. (2006) Roberta Gerbasi 108/110
- 11. (2006) Luca Naticchioni 110/110
- 12. (2006) Francesca Scipioni 107/110
- 13. (2006) Micol Benetti, 104/110
- 14. (2006) Paolo Fermani, 110/110 and laude
- 15. (2006) Marco Innocenti, 110/110 and laude
- 16. (2006) Simona Iudicone, 106/110
- 17. (2006) Martina Corsi, 110/110 and laude
- 18. (2006) Emanuela Giannini, 110/110 and laude
- 19. (2006) Andrea Maselli, 110/110
- 20. (2006) Lisa Scalone, 108/110
- 21. (2006) Vincenzo Obiso, 110/110 and laude
- 22. (2006) Rosamaria Crea, 110/110 and laude
- 23. (2007) Eloisa Menegoni, 106/110.
- 24. (2007) Selene Risi, 109/110.
- 25. (2007) Alfredo Carpineti, 106/110
- 26. (2007) Maria Archidiacono, 110/110 and Laude
- 27. (2007) Donatella Fiorucci, 110/110
- 28. (2008) Alice Pisani, 110/110
- 29. (2008) Giulia de Angelis 94/110
- 30. (2008) Luigi Perna 98/110
- 31. (2008) Samuele Antonucci 101/110
- 32. (2008) Rosa Maggi 104/110
- 33. (2008) Andrea Bracco 110/110 and Laude
- 34. (2008) Giovanni Pisani 110/110 and Laude

- 35. (2008) Martina Vicinanza 108/110
- 36. (2009) Maria Concetta Tringali 96/110
- 37. (2009) Najla Said 110/110
- 38. (2009) Alessandro Pasqui 99/110
- 39. (2009) Chiara Teodori 96/110
- 40. (2009) Valentina Salvatelli 110/110 and Laude
- 41. (2009) Gioia Rau 97/110
- 42. (2010) Elisabetta Giuliani 107/110
- 43. (2010) Martina Gerbino 110/110 and Laude
- 44. (2010) Federico Bianchini 110/110
- 45. (2011) Alessia Tortosa 99/110
- 46. (2011) Elva Cecconi 102/110
- 47. (2012) Stefano Risoli 104/110
- 48. (2012) Eleonora Buscemi 96/110
- 49. (2012) Giulia Biosa 101/110
- 50. (2012) Lorenzo Pieri 110/110 and Laude
- 51. (2012) Matteo Di Giovanni 104/110
- 52. (2012) Claudia De Luca 108/110
- 53. (2013) Anna Silvia Baldi 107/110
- 54. (2013) Silvia Martocchia 110/110 and Laude
- 55. (2013) Gabriele Coppi 110/110 and Laude
- 56. (2013) Francesca Marchi 110/110
- 57. (2013) Valerio Roscani 102/110
- 58. (2013) Giulia Rosati 86/110
- 59. (2013) Federica Duras 107/110
- 60. (2015) Federica Guidi 110/110 and Laude
- 61. (2015) Giuseppe Gnocchi 110/110 and Laude
- 62. (2015) Lorenzo Zanisi 110/110 and Laude
- 63. (2015) Daniele Notarmuzi, 110/110 and Laude.
- 64. (2015) Davide Guerra, 108/110
- 65. (2016) Stefano Antonini, 110/110 and Laude.
- 66. (2016) William Giare', 110/110 and Laude.

**Laurea Specialistica/Magistrale**

- 1. (2007) Luca Pagano, 110/110 and Laude, May 2007.
- 2. (2007) Francesco de Bernardis 110/110 and Laude, July 2007.
- 3. (2008) Roberta Camerini, 110/110 and Laude, April 2008.
- 4. (2008) Erminia Calabrese, 110/110 and Laude, July 2008.
- 5. (2008) Matteo Martinelli, 110/110 and Laude, July 2008.
- 6. (2008) Silvia Galli, 110/110 and Laude, October 2008.
- 7. (2008) Stefania Pandolfi, 110/110 and Laude, October 2008.
- 8. (2009) Marco Ruzza, 110/110 and Laude, January 2009.
- 9. (2009) Elena Giusarma, 110/110 and Laude, July 2009.
- 10. (2009) Paolo Fermani, 110/110 and Laude, July 2009.
- 11. (2009) Eloisa Menegoni, 110/110, July 2009.
- 12. (2009) Alessandro Seganti, Co-supervised with Dr. Luca Amendola 110/110 and laude, September 2009.
- 13. (2009) Giammarco Campanella, Co-supervised with Dr. Giovanna Tinetti, 110/110 and laude, September 2009.
- 14. (2009) Andrea Maselli, 110/110 and laude, October 2009.
- 15. (2009) Maria Archidiacono, 110/110 and laude, October 2009.
- 16. (2010) Selene Risi, 110/110 and laude, January 2010
- 17. (2010) Eleonora Di Valentino, 110/110 and laude, July 2010
- 18. (2010) Micol Benetti, 110/110, September 2010.
- 19. (2010) Giovanni Pisani, 110/110, October 2010.
- 20. (2010) Rosa Maggi, 110/110 and laude, December 2010.
- 21. (2011) Alice Pisani, 110/110 and laude, January 2011
- 22. (2011) Martina Corsi, 110/110 and laude, May 2011.
- 23. (2011) Luigi Squillante, 110/110 and laude, May 2011.
- 24. (2011) Valentina Salvatelli 110/110 and laude, July 2011.
- 25. (2011) Najla Said 110/110 and laude, July 2011.
- 26. (2011) Emanuele Castorina 110/110 and laude, September 2011
- 27. (2011) Gioia Rau 110/110 and laude, October 2011
- 28. (2011) Andrea Bracco 110/110 and laude, November 2011
- 29. (2012) Martina Gerbino 110/110 and laude, July 2012
- 30. (2012) Federico Bianchini 110/110 and laude, July 2012.
- 31. (2013) Giacomo Fragione 110/110 and laude, July 2013.
- 32. (2013) Pasquale Bosso 108/110, July 2013
- 33. (2013) Antonella Palmese 110/110 and Laude, October 2013.
- 34. (2013) Alessia Tortosa 110/110 and Laude, October 2013.

- 35. (2013) Laura Salvati 110/110 and Laude, October 2013.
- 36. (2014) Elisabetta Giuliani 110/110 and Laude, October 2014
- 37. (2014) Edwige Pezzulli 110/110 and Laude, Co-supervised with Dr. Raffaella Schneider, October 2014
- 38. (2014) Mattia Mancini 110/110 and Laude, Co-supervised with Dr. Raffaella Schneider, October 2014
- 39. (2015) Valerio Roscani 110/110 and Laude
- 40. (2016) Andrea Caputo, 110/110 and Laude, July 2016.
- 41. (2016) Stefano Paradiso, 110/110 and Laude, September 2016.
- 42. (2016) Riccardo Schiavi, 110/110 and Laude, September 2016.
- 43. (2017) Federica Guidi, 110/110 and Laude, July 2017.
- 44. (2018) William Giare', 110/110 and Laude, July 2018.
- 45. (2018) Massimo Guidi, 110/110 and Laude, December 2018.
- 46. (2020) Francesco Iacovelli, 110/110 and Laude, September 2020

**Ph. D. students**[1]

- 1. (2007) Paolo Serra, Astronomy, [postdoc at NASA/AMS, CA, USA] .
- 2. (2010) Luca Pagano, Astronomy, [postdoc at NASA/JPL, CA, USA].
- 3. (2010) Francesco de Bernardis, Astronomy, [postdoc at Irvine, CA, USA].
- 4. (2010) Giulia Gubitosi, Physics, [postdoc at Saclay, Paris, France].
- 5. (2011) Silvia Galli (Joint Resarch project with Prof. James Bartlett, APC, Paris), Physics, [Postdoc at IAP, Paris, France].
- 6. (2011) Erminia Calabrese, Astronomy, [postdoc at University of Oxford, UK].
- 7. (2011) Stefania Pandolfi, Astronomy, [postdoc at Dark Center, University of Copenaghen, DK].
- 8. (2011) Matteo Martinelli, Physics, [postdoc at SISSA, Trieste, Italy].
- 9. (2012) Maria Archidiacono, Astronomy, [postdoc at University of Aarhus, DK]..
- 10. (2012) Eloisa Menegoni, Astronomy, [postdoc at University of Heidelberg, Germany].
- 11. (2013) Micol Benetti, Astronomy, [postdoc at University of Rio de Janeiro, Brasil]
- 12. (2014) Arianna Di Cintio (joint Research project with Alexander Knebe, Madrid), [postdoc at Dark Center, University of Copenaghen, DK].
- 13. (2014) Eleonora di Valentino, Physics, [Postdoc at IAP, Paris, France].
- 14. (2014) Najla Said, Astronomy.
- 15. (2014) Valentina Salvatelli, Astronomy, [Postdoc at Marseille University, France].
- 16. (2014) Andrea Marchini, Physics.
- 17. (2015) Martina Gerbino, Physics, [Postdoc at Oskar Klein Institute, Stockolm University, Sweden]
- 18. (2016) Laura Salvati, Astronomy, [Postdoc at Orsay, Paris University, France].
- 19. (2017) Giovanni Cabass, [Postdoc at University of Munich, Germany]
- 20. (2019) Fabrizio Renzi, Astronomy [Postdoc at University of Leiden, Holland]
- 21. (2019) Ludovico Capparelli, Physics
- 22. (2019) Mehdi Shokri, Physics

[1] First position after Ph.D. shown in square brackets for students that remained in academia.

### Current Ph. D. students

- 1. William Giare', 2nd year, Physics.

### Postdocs

- (2003-2005) Carolina Odman (Marie Curie Postdoc in Rome, La Sapienza, IT)
- (2013-2015) Elena Giusarma (INFN, Theory postdoc).
- (2014-2015) Luca Pagano (Physics Department, Theory postdoc).
- (2019-2020) Purnendu Karmakar (Assegno di ricerca, Ateneo Sapienza).

### External Ph. D. Examiner

- Carolina Odman, Cambridge, 2003
- Jussi Valiviita, Helsinki, 2005
- Fabrizio Briscese, Rome, 2008
- Reijo Keskitalo, Helsinki, 2009
- Manuel Pena Jimenez, Valencia, 2013
- Elena Giusarma, Valencia, 2013
- Matteo Costanzi, Trieste, 2015
- Daniele Tavagnacco, Trieste, 2015

## Funding Information

**Short summary:** I obtained several grants from different institutions as Principal investigator of Co-Investigator for a total sum (approximate) of more than 750 Keuro (not adjusted for inflation). I have also participated as simple Investigator to several grants.

### Fundings obtained as Principal Investigator or Co-Investigator

- PPARC research fellowship, Oxford UK. **Principal Investigator**. Grant Value (approximate): 100 Keuro.
- FP6-2002-MOBILITY-5: Cosmic Microwave Background Anisotropies and Polarization: a bridge between cosmology and new fundamental physics, **Principal Investigator**, Grant Value (approximate): 120 Keuro.
- PRIN 2012- "Theoretical Astroparticle Physics", **Co-Investigator of the Rome node together with Enrico Nardi**, Grant Value (approximate): 492 Keuro (1/6 to the Rome node).
- PRIN-INAF 2009 "Astronomy probes fundamental physics", **Co-Investigator**, Grant Value (approximate): 80 Keuro.
- Contratto ASI, COFIS/ASI I/016/07/0, "Constraining Fundamental Physics with Cosmology", **Principal Investigator**, Grant Value (approximate): 40 Keuro.
- Fondi di Ateneo Federato AST 2008 - Universita' La Sapienza di Roma, **Principal Investigator**, Grant Value (approximate): 10 Keuro.
- Fondi di Ateneo 2016- "Cosmic complementarity: using Cosmic Microwave Background anisotropies, Weak Lensing and Clusters to constrain Dark Matter and Dark Energy.", **Principal Investigator**, Grant Value: 15 Keuro.
- Fondi di Ateneo 2017- "Constraining the nature of Dark Matter with Cosmology", **Principal Investigator**, Grant Value: 35 Keuro.
- Fondi di Ateneo 2018- "Tension between cosmological datasets", **Principal Investigator**, Grant Value: 13 Keuro.
- FFABR 2017, per professori associati, 3K euro, **Principal Investigator**.

- Convenzione Quadro tra ASI ed INAF per "Planck LFI Fase E2 Attivita' Scientifiche", I/072/09/0., **Co-Investigator**, Grant Value (approximate): 10 Keuro.
- Contratto ASI EUCLID-IC (I/031/10/0), **Co-Investigator**, Grant Value (approximate): 10 Keuro.
- Collaborazione scientifica Tecnologica Italia-Slovenia "Cosmobridge" (Bando Ministero degli Esteri), **Co-Investigator**, Grant Value (approximate): 5 Keuro.
- Grant for CERN Paid Scientific Associate. **Principal Investigator**, Grant Value: 25 Keuro.
- INFN Grant for a two years postdoctoral position for non-Italian citizens. **Principal Investigator**, Grant Value (approximate): 60 Keuro.
- INFN Grant for the organization of a 2 months workshop at the Galileo Galilei Institute in Florence, 2009, **Co-Investigator**, Grant Value (approximate): 100 Keuro.
- Italian Physical Society Grant for the organization of a Enrico Fermi School in Varenna, "New Horizons for Modern Cosmology", 2013, **Principal Investigator**, Grant Value (approximate): 60 Keuro.
- INFN Grants for the coordination of the Astroparticle Physics node in Rome, FA-51 and TASP, **Principal Investigator**, approximately 10 Keuro par year, since 2006. 100 Keuro in total.

### Fundings obtained as Participant

- PRIN 2004- "PROGETTO GEMINI: MISURA DEL SEGNALE SUNYAEV-ZELDOVICH DA AMMASSI DI GALASSIE NEI DUE EMISFERI.", **Participant**, Grant Value (approximate): 300 Keuro.
- PRIN 2006- "COSMOLOGIA MILLIMETRICA CON GRANDI MOSAICI DI RIVELATORI", **Participant**, Grant Value (approximate): 278 Keuro.
- PRIN 2009- "Spettroscopia millimetrica e submillimetrica per studi ad alta risoluzione di galassie primordiali e ammassi di galassie", **Participant**, Grant Value (approximate): 257 Keuro.
- Fondi di Ateneo Federato AST 2009 - Universita' La Sapienza di Roma, **Participant**, Grant Value (approximate): 10 Keuro.
- Fondi di Ateneo 2007- Universita' La Sapienza di Roma "Misure di precisione sul fondo cosmico a microonde", **Participant**, Grant Value (approximate): 30 Keuro.
- Fondi di Ateneo 2010- Universita' La Sapienza di Roma "PRECISION OBSERVATIONAL COSMOLOGY", **Participant**, Grant Value (approximate): 30 Keuro.
- Fondi di Ateneo 2011- "PRECISION COSMOLOGY and FUNDAMENTAL PHYSICS", **Participant**, Grant Value (approximate): 30 Keuro.
- H2020-COMPET-2017, "Enabling Weak lensing Cosmology", **Participant**, Grant Value for the local Rome node (approximate): 20 Keuro.

## Prizes and awards

- Sapienza Ricerca 2010 Prize for the best research in physics at the university of Rome "Sapienza" in 2010.
- Abilitazione Scientifica Nazionale 2012, idoneita' a professore associato per i settori 02/A1, 02/A2, 02/C1.
- Abilitazione Scientifica Nazionale 2012, idoneita' a professore ordinario per il settore 02/A2.
- Abilitazione Scientifica Nazionale 2017, idoneita' a professore ordinario per il settore 02/C1.
- CERN Paid Scientific Associate 2007.
- PPARC fellow, Oxford 2000.
- FP6-2002-MOBILITY-5 grant (Coordinator).
- Gruber prize 2018 as member of the Planck collaboration.
- Co-coordinator (together with George Efstathiou) of the Planck 2015 paper on cosmological parameters.
- The paper by Salvatelli et al, 2014 has been included in the Editor's suggestions on Physical Review Letters: `https://journals.aps.org/prl/abstract/10.1103/PhysRevLett.113.181301`.

- Interview on the New York Times, https://archive.nytimes.com/www.nytimes.com/library/national/science/112699sci-big-bang.html, for the B97 results.
- The paper co-authored with Roberto Trotta and published on Physical Review Letters in 2005 received a significant interest also from the non-specialized press. Most notably from "The Economist": https://www.economist.com/science-and-technology/2005/06/23/ripples-in-the-sands-of-time.
- Ranked as first on the Evaluation report for a full professor position in astroparticle physics at the Norwegian University of Science and Technology, 2019.
- The paper co-authored with Eleonora Di Valentino and Joseph Silk "Planck evidence for a closed universe and a possible crisis in Cosmology", published on Nature Astronomy in 2020, is in the 99th percentile (ranked 188th) of the 330,622 tracked articles of a similar age in all journals and the 94th percentile (ranked 4th) of the 77 tracked articles of a similar age in Nature Astronomy (see https://www.nature.com/articles/s41550-019-0906-9/metrics).

## Collaboration and Coordination Membership

### Institutional responsibilities

- Member for 8 years of the Department of Physics Council / Membro della Giunta del Dipartimento di Fisica (2006-2014), Sapienza, University of Rome.
- Member for 4 years of the Science Faculty Council / Giunta della Facolt di Scienze MM, FF, NN (2006-2010), Sapienza, University of Rome.
- Member of the Board of Faculty of the Ph.D. in Astronomy, Astrophysics and Space Science, Sapienza Universit di Roma e Universit di Tor Vergata (since 2011).
- Member of the Board of Faculty of the Ph.D. in Astronomy, Sapienza Universit di Roma (2003-2011).
- Member of the committee for the Job Opportuinities of the Physics Department / Membro della Commissione Lavoro del Dipartimento di Fisica (2013-2017)
- Member of the "Progetto Ponte Azione 4 B3" initiative, Education and Public Outreach, University of Rome Sapienza (2011-2012).
- Member of the Amaldi Research Center at University of Rome Sapienza (since 2018).
- Associate INFN (since 2006).
- Coordinator of the Astroparticle Theoretical Physics INFN node in Rome La Sapienza. Coordinator of the "Iniziativa Specifica FA51" Astroparticle Physics node in Rome since 2006 and coordinator of TAsP (Theoretical Astroparticle Physics) since 2013.
- Associate INAF.
- Member of SIGRAV (Societa' Italiana di Relativita' Generale e Fisica della Gravitazione).
- Member of the Italian Physical Society (SIF).
- Co-coordinator of Oxford Planck Surveyor Data Processing Center (2000-2002).
- Co-coordinator of Oxford node of CMBNET TMR Network (2000-2002).

### International Collaborations

- In the past twenty years I have established several international collaborations with well known experts in the field of theoretical cosmology as Asantha Cooray (University of California Irvine), Ruth Durrer (University of Geneva), Alan Heavens (Imperial College), Daniel E. Holz (Chicago), Marc Kamionkowsky (John Hopkins), Rocky Kolb (University of Chicago), Eric Linder (Berkeley), Olga Mena (University of Valencia), Joseph Silk (Oxford, IAP and John Hopkins), George Smoot (Berkeley), David Spergel (Princeton), and Licia Verde (University of Barcelona).
- After the discovery of the GW170817 event, I am currently deeply involved in the field of Gravitational Waves standard sirens , working in collaboration with Daniel Holz (Chicago), Michele Maggiore (Geneva), and Emanuele Berti (John Hopkins).

- Member of the Planck CMB satellite collaboration as Planck Scientist (I have the rights to sign all papers coming from the Planck collaborations) and member of the PLANCK LFI Core Team since 2002.
- Member of the EUCLID satellite Consortium.
- Member of BOOMERANG (Balloon Observations Of Millimetric Extragalactic Radiation ANd Geomagnetics) experiment. *http://oberon.roma1.infn.it/boomerang/b2k/*
- Member of the OLIMPO experiment.
- Member of the MITO experiment.
- Member of the SAGACE satellite Science team (Proposal).
- Member of the COrE satellite Science team (Proposal).
- Member of the CORE-M5 satellite Science team (Proposal).
- Member of the Data Analysis and Theory team of the SWIPE CMB experiment.
- Member of the Herschel-SPIRE Legacy Survey (HSLS) Science Team (Proposal).

### Organization of International workshops and schools

- Co-organizer of CMBNET, Organisational Workshop, 6-8 December 2000, Oxford, UK.
- Co-organizer of CMBNET Workshop on Science and Parameter Extraction, Universita' di Tor Vergata, Roma, Italy, May 24-25, 2001.
- Co-organizer of CMBNET Workshop on Science and Parameter Extraction, University of Oxford, Oxford, UK, February 20-21, 2003.
- Co-organizer of Oxford-Princeton Workshop on Cosmology, Princeton University, Princeton, USA, March 20-21, 2003.
- Organizer of the 2009 Workshop at the Galileo Galilei Institute in Florence "New Horizons For Modern Cosmology" (from January 19th to March 13th 2009).
- Organizer of the conference on Dark Matter at Galileo Galilei Institute in Florence (February 9th, 2009).
- Organizer of the conference on Dark Energy at Galileo Galilei Institute in Florence (March 2nd, 2009).
- Co-Organizer of the "Azores School on Observable Cosmology", Azores, Portugal, September 2011
- Director of the "New Horizons for Observational Cosmology" Enrico Fermi SIF School, Varenna, Lake Como, Italy, 2013
- Co-Organizer of the "ICTP-Trieste/ICTP-SAIFR School and Workshop on Observational Cosmology", December 1- 12, 2014, Sao Paulo, Brazil.

### Commissions of trust

- Expert reviewer for the Royal Society, UK for the University Research Fellowship scheme.
- Expert reviewer for the MIUR program of "Rientro dei Cervelli" entitled to Rita Levi-Montalcini.
- Expert reviewer for the INFN "Fellini" program of postdocs for non-italian citizens.
- Expert reviewer for the Chilean National Science and Technology Commission.
- Expert reviewer for the Netherlands Organisation for Scientific Research (NWO).
- Expert reviewer for the Executive Agency for Higher Education, Research, Development and Innovation Funding, Romania.
- Expert reviewer for RNSF, Ministry of Education and Science, Georgia.
- Peer Reviewer for Physical Review D, Physical Review Letters, Astrophysical Journal, Astronomy and Astrophysics, International Journal of Modern Physics D, JCAP, JHEP, Monthly Notices of the Royal Astronomical Society, Nature Astronomy, Physics of the Dark Universe, European Physical Journal C.
- Invited Editor for New Astronomy Reviews, Proceedings of the 2nd CMBnet Workshop (February 2003, Oxford).
- Invited Editor for Nuclear Physics B, Proceedings Supplement, Proceedings of the GGI conference (February 2009, Florence).
- Member of the Editorial Board of the journal Galaxies.

## Foreign Languages

- **a**. English (good)
- **c**. French (good)

## Refence letters

- Letter of Support from Professor Asantha Cooray, University of California, Irvine, USA.
- Letter of Support from Professor David Spergel, Flatirion Institute and Princeton University, USA.
- Letter of support from Professor Edward Kolb, University of Chicago, USA.
- Letter of support from Professor Joseph Silk, John Hopkins University, USA.

## Scientific Production: Bibliometrics

I consider 4 databases: inSPIRE HEP, SCOPUS, NASA/ADS and ISI web of science.

### inSPIRE HEP database

According to the **inSPIRE HEP** database (`http://inspirehep.net/?ln=it`) at 04/11/2020 I can retrieve the following bibliometric information:

- Total Number of Citeable Papers: 440.
- Total Number of Citations: 68018
- Mean number of Citations per Article: 154.6
- h-index: 104

Considering only the past 15 years, I have:

- Total Number of Citeable Papers: 358.
- Total Number of Citations: 59551
- Mean number of Citations per Article: 166.3
- h-index: 96

### SCOPUS database

According to the **SCOPUS** database (`https://www.scopus.com/home.url`) at 4/11/2020 I can retrieve the following bibliometric information:

- Total Number of Citeable Papers: 421.
- Total Number of Citations: 34332.
- Mean number of Citations per Article: 81.54
- h-index: 82

Considering only the past 15 years, I have:

- Total Number of Citeable Papers: 359.
- Total Number of Citations: 28796
- Mean number of Citations per Article: 80.2
- h-index: 76

### NASA/ADS database

According to the **NASA/ADS** database (`http://adsabs.harvard.edu/abstract_service.html`) at 4/11/2020 I can retrieve the following bibliometric information:

- Total Number of Citeable Papers: 492 (386 Refereed).
- Total Number of Citations: 68655 (65091 Refereed)
- Mean number of Citations per Article: 139.5 (168.6 Refereed)
- h-index: 113

Considering only the past 15 years, I have:

- Total Number of Citeable Papers: 392.
- Total Number of Citations: 60667
- Mean number of Citations per Article: 154.76
- h-index: 105

### ISI web of knowledge

According to the **ISI web of knowledge** database at 04/11/2020 I can retrieve the following bibliometric information:

- Total Number of Citeable Papers: 422.
- Total Number of Citations: 42189
- Mean number of Citations per Article: 99.97
- h-index: 98

Considering only the past 15 years, I have:

- Total Number of Citeable Papers: 355.
- Total Number of Citations: 29789
- Mean number of Citations per Article: 83.9
- h-index: 90

## Institute colloquia and participation to Conferences

**Short Summary:** Since 2000 I have presented talks and lectures at **92** national and international conferences (mostly invited). I also gave **59** invited seminars and colloquia in italian and international institutions. It should be considered that the heavy teaching duties in La Sapienza have made travelling challenging in the past 15 years and I had to do decline several talks. I have also been invited to about 4 conferences in 2020 that have unfortunately been canceled due to the COVID-19 Pandemic.

### Conferences

- 1. 19th Texas Symposium on Relativistic Astrophysics and Cosmology, held in Paris, France, Dec. 14-18, 1998."The Gravitational Wave Contribution to the Cosmic Microwave Background".
- 2. Topological Defects and the non-equilibrium dynamics of symmetry breaking phase transition, Les Houches, 16th-26th February, 1999. "Topological Defects in Cosmology"
- 3. Les Rencontres de Physique de la Vallee d'Aoste, La Thuile, Aosta, February 27-March 4, 2000.*Plenary Talk*, "Round table on the future of Cosmology and Particle Physics".
- 4. VIII Convegno su Problemi di Fisica Teorica, Cortona 2000, 10-20 June 2000.**Plenary Talk**. "Boomerang e i modelli cosmologici".
- 5. Problems of vacuum energy, 24-26 August 2000, NORDITA and TAC, Copenhagen, Denmark; **Plenary Talk**. "Consequences on the Cosmological Constant from the BOOMERanG experiment".

- 6. EuroConference on Frontiers in Particle Astrophysics and Cosmology, San Feliu de Guixols, Spain, 30 September - 5 October 2000; "Big bang nucleosynthesis and the Boomerang experiment"
- 7."Higgs and Supersymmetry ", Orsay, Paris, March 19-22, 2001; **Plenary Talk**, "Balloon experiments for CMB"
- 8. Convegno Informale di Fisica Teorica, Cortona, 30 May-2 June 2001; **Plenary Talk**, "Nuovi risultati da Boomerang".
- 9. "Frontiers of the Universe", XIII Rencontres de Blois, 17th - 23rd June 2001; **Plenary Talk**, "Cosmological Parameters from BOOMERanG".
- 10. COSMO-01 International Workshop on Particle Physics and the Early Universe, Rovaniemi, Aug 30-Sep 04, 2001; **Plenary Talk**, "Cosmological parameters from BOOMERanG"
- 11. Frontiers in Particle Astrophysics and Cosmology, Lenggries (Munich), Germany, 29 September-4 October 2001; **Plenary Talk**, "Status of CMBR".
- 12. 4th Heidelberg International Conference on Dark Matter in Astro- and Particle Physics, Cape Town, South Africa (February 2002. Eds. H. Klapdor-Kleingrothaus and R. Viollier). **Plenary Talk**, "Multiple Peaks in the CMB from BOOMERanG and DASI: Consequences for Cosmology".
- 13. "MATTER-ANTIMATTER ASYMMETRY", XIV Rencontres de Blois, 16th - 22rd June 2002; **Plenary Talk**, "Cosmological parameters: status and prospects".
- 14. "ON THE NATURE OF DARK ENERGY", XVIIIth IAP Colloquium, Paris, 1st-5th July 2002; "The Death of Quintessence ?".
- 15. 8th Summer Institute at Gran Sasso National Laboratory, "New Dimensions in Astroparticle Physics", July 7-19, 2002, Assergi, Italy; **Plenary Talk**, "Cosmological parameters: status and prospects"
- 16. TAUP 2001 (7th international workshop on Topics in Astroparticle and Underground Physics), Sep 2001, Laboratori Nazionali del Gran Sasso, Assergi, Italy; "Early-Universe constraints from Boomerang, Dasi and Maxima"
- 17. JENAM 2002, The Cosmology of Extra dimensions and varying Fundamental Constants. Porto, Portugal, 4-7, September 2002; **Plenary Talk**, "CMB and Cosmological Parameters: Status and Prospects".
- 18. INTERNATIONAL SCHOOL OF ASTROPHYSICS "DANIEL CHALONGE", ASTROFUNDAMENTAL PHYSICS, Palermo, September 7-18, 2002; **Plenary Talk**, "CMB and Galaxy Clustering".
- 19. COSMO-02, International Workshop on Particle Physics and the Early Universe, Chicago, Illinois, USA, September 18-21, 2002; "New Constraints on Dark Matter and Dark Energy"
- 20. Spanish Relativity Meeting in Gravitation and Cosmology, ERE- 2002, Menorca, Spain, September 22-24, 2002; **Plenary Talk**, "'CMB and Cosmological Parameters: Status and Prospects".
- 21. Supersymmetry and the Early Universe. Annual School and Mid-Term Review Meeting of the Fifth Framework, EC Network (HPRN-CT-2000-00152) Oxford, 26-29 September 2002; **Plenary Talk**, "CMB determination of the cold dark matter density".
- 22. CMB and Cosmology: Where Are We? CMBNet Ringberg Meeting and Mid Term Review (2-6 December 2002, Ringberg Castle, Tegernsee, Germany); "Constraints on Inflation from CMB measurements".
- 23. 1st Oxford-Princeton Workshop on Cosmology Dept. of Astrophysical Sciences, Peyton Hall, Princeton University, USA. March 17-18th, 2003; "The state of the equation of state".
- 24. Euresco Conference, 'What comes beyond the Standard Model', 12. - 17. July 2003 Portoroz, Slovenja; **Plenary Talk**, "'CMB and Cosmological Parameters: Status and Prospects".
- 25. AHEP 2003, International Workshop on Astroparticle and High Energy Physics October 14 - 18, 2003, Valencia, Spain;**Plenary Talk**, "CMB and Cosmological Parameters: Status and Prospects".
- 26. Rencontres de Moriond 2004, Exploring the Universe Contents and Structures of the Universe La Thuile, Italy (March 28 - April 4, 2004); **Plenary Talk**, "New constraints on Dark Energy"
- 27. International Enrico Fermi School of Physics, Background Microwave Radiation and Intracluster Cosmology,6-16 July 2004, Varenna, Italy. **Invited Lecture**, "New constraints on Dark Matter and Dark Energy"
- 28. Ecole Internationale Daniel Chalonge, 8th Paris Cosmology Colloquium 2004, Observatoire de Paris, Paris.9th-10th DECEMBER 2004 **Plenary Talk**, 'Cosmological constraints on Neutrino Physics'

- 29. 3rd Oxford-Princeton Workshop on Astrophysics and Cosmology Jadwin Hall, Princeton University, USA. February 28th-March 2nd, 2005. **Plenary Talk**,"Dark energy and the ISW"
- 30.Incontri informali di Fisica Teorica, Cortona, 28 Maggio 2005,"L'effetto Sachs Wolfe Integrato", **Invited Talk**
- 31. Ecole Internationale Daniel Chalonge, 9th Paris Cosmology Colloquium 2005, Observatoire de Paris, Paris.26th-30th June 2005 **Plenary Talk**, 'Cosmology and Neutrino Physics'
- 32. Cosmo-05, Bonn. August 28 - September 01, 2005, "New Constraints on Neutrino Physics"
- 33. ENTApP Dark Matter meeting at SISSA, October 2005, Round Table on "The covariant formulation of the MOND theory as an alternative to the existence of dark matter", **Invited Talk**.
- 34. NO-VE III International Workshop on: "NEUTRINO OSCILLATIONS IN VENICE", February 7-10, 2006, "Neutrino Masses in Cosmology", **Invited talk**.
- 35. Fundamental Physics With Cosmic Microwave Background Radiation, Irvine, March 23-25, 2006. "Constraints on Neutrino Physics from Cosmology",**Invited Talk**
- 36. L'eredit scientifica di Ettore Majorana, Rome, December 7th, 2006. "L'Universo dei Neutrini", **Invited talk**.
- 37. Problemi Attuali di Fisica Teorica, Vietri sul Mare, Salerno, March 30th-April 4th 2007, "WMAP-normalized Inflationary Model Predictions and the Search for Primordial Gravitational Waves with Direct Detection Experiments", **Invited Talk**.
- 38. XII International Workshop on Neutrino Telescopes, Venice, March 6-9, 2007, "Is Cosmology Compatible with Sterile Neutrinos ?", **Invited Talk**.
- 39. XIXmes Rencontres de Blois, Matter and energy in the Universe: from nucleosynthesis to cosmology, Blois, France, 20th May - 25th May, 2007, "New Constraints on Neutrino Physics from Cosmology", **Invited Talk**.
- 40. IFAE 2007, VI edizione degli Incontri sulla Fisica delle Alte Energie, 11-13 Aprile 2007, Napoli, "New Constraints on Neutrino Physics from Cosmology", **Invited Talk**.
- 41. DAC07 Data Analysis in Cosmology 2007,Santander, Spain, 9-12 July, 2007, "Cosmology and Fundamental Physics", **Invited Talk**.
- 42. Mini-workshop on Dark-Energy and Gravitational Waves, July 25 - 27, 2007, APCTP Headquarters, Pohang, South Korea, "New Constraints on the Dark Side", **Invited Talk**.
- 43. Ecole Internationale Daniel Chalonge 11th Paris Cosmology Colloquium 2007, August 16-18, 2007, "New Constraints on the Dark Side", **Invited Talk**.
- 44. The Path to Neutrino Mass, Workshop 3-6 September 2007, University of Aarhus, "Constraining Neutrino Mass with Cosmology", **Invited Talk**.
- 45. Societa' Italiana di Fisica, XCIII National Congress Pisa, 24 - 29 September 2007, "New Constraints on the Dark Side", **Invited Talk**.
- 46. European Science Foundation Exploratory Workshops. Porto, 26-30 March 2008, "New Constraints on the Dark Side", **Invited Talk**.
- 47. GWADW2008 Workshop, Elba Island, Italy, May 12 to 18, 2008, "The Cosmological Gravitational Wave Background", **Invited Talk**.
- 48. VIII Mexican School on Gravitation and Mathematical Physics "Speakable and unspeakable in gravitational physics", 7/12/2009, Mexico, **Invited Talk**
- 49. GGI Institute, Conference on "The Dark Matter Connection: Theory and Experiment', May 17th-21st 2010, Florence, Italy. "Precision Cosmology. Status and Perspectives", **Invited Talk**.
- 50. IRAP Ph.D. Lectures, February 1st-19th, Observatoire de la Cote d'Azur, Nice, France., 1st-19th February 2010. "New Results on Cosmic Microwave Background Anisotropies",**Invited Lecture**.
- 51. 5th Iberian Cosmology Meeting, 29-31 March 2010, Porto, Portugal. "New Constraints on Neutrino Mass and Dark Energy Equation of State", **Invited Talk**.
- 52. School on "Neutrino Masses", Padova 3-6 May 2010, Italy. "Neutrinos in Cosmology", **Invited Talk**.
- 53. PASCOS 2010, July 19th-23rd 2010, Valencia, Spain. "CMB Anisotropies: Status and Perspectives", **Invited Plenary Talk**.

- 54. The second Galileo - Xu Guangqi meeting, July 12-18, 2010, Ventimiglia, Italy, "CMB Anisotropies: Status and Perspectives", **Invited Talk**.
- 55. COSMO/CosPA 2010, 27 September- 1 October 2010, University of Tokyo, Tokyo, Japan, "CMB Anisotropies: Status and Perspectives", **Invited Talk**.
- 56. NOW-2010, 4th-11th September 2010, Conca Specchiulla, Otranto Italy, "Neutrinos in cosmology", **Invited Talk**.
- 57. Miami-2010, 14th-19th December 2010, Fort Lauderdale, Florida, USA, "Constraining Fundamental Physics with CMB anisotropies",**Invited Talk**.
- 58. ESSENTIAL COSMOLOGY FOR THE NEXT GENERATION, January 10-14, 2011 in Puerto Vallarta, Mexico, "CMB constraints on fundamental physics", **3 Invited Lectures**
- 59. XIV International Workshop on Neutrino Telescopes, March 15-18, 2011, Venice, Italy, **Invited Talk**, "Cosmology and Neutrino Masses".
- 60. Workshop on Beyond Three Family Neutrino Oscillations, May 3-4 2011, LNGS, Gran Sasso, Italy, **Invited Talk**, "Sterile neutrino constraint from cosmology".
- 61. Neutrini in Cosmologia, Scuola di Formazione INFN, May 16-18 2011, Padova, Italy, **Invited Lecture**, Proprieta' dei neutrini dalle misure cosmologiche .
- 62. Euclid science workshop, 23 25 May 2011, Space Science Center / DARK, Copenaghen, Denmark, **Invited Talk**, "Constraining Modified Gravity and Dark Energy with Euclid".
- 63. DEUS workshop, 8 12 August 2011, Space Science Center / DARK, Copenaghen, Denmark, **Invited Talk**, "A possible indication for Dark Radiation from current cosmological data".
- 64. Azores School on Observational Cosmology, September 1-6, 2011 in Angro do Heroismo, Azores, Portugal, "CMB constraints on fundamental physics", **3 Invited Lectures**
- 65. Third Galileo - Xu Guangqi meeting, October 11-15, 2011 National Astronomical Observatories - Beijing (China), **Invited Talk**, "CMB constraints on Neutrino Physics"
- 66. IRAP Ph.D. Lectures, September 13-15, Observatoire de la Cote d'Azur, Nice, France., 2011. "New Results on Cosmic Microwave Background Anisotropies",**2 Invited Lectures**.
- 67. "ERC Starting Grant Kick-off meeting", November 8-9, 2011, GRAPPA, Amsterdam, **Invited Talk**, "CMB constraints on Dark Matter"
- 68. "PASCOS 2012", June 3-8, 2012, Merida, Mexico, **Invited Plenary Talk**, "New Results on CMB anisotropies"
- 69. "GGI Conference: What is $\nu$ ?", June 24-29, 2012, Florence, Italy, **Invited Plenary Talk**, "New Results on CMB anisotropies"
- 70. "NOW 2012", September 9-16, 2012, Otranto, Italy, **Invited Plenary Talk**, "New Constraints on Neutrino Physics from Cosmology"
- 71. "NuMASS 2013", February, 2013, Milano, Italy, **Invited Plenary Talk**, "New Constraints on Neutrino Physics from Cosmology"
- 72. "The Universe as seen by Planck, 47th ESLAB symposium", 2-5 April, 2013, ESTEC, Holland, **Invited Talk**, "Planck constraints on Neutrino Physics"
- 73. "Chalonge Meudon Workshop 2013: Warm Dark Matter Galaxies in Agreement with Observations: Formation, Evolution and Supermassive Black Holes", 5-7 June, 2013, Observatoire de Paris Meudon, France, **Invited Plenary Talk**, "Planck constraints on Neutrino Physics"
- 74. "ISAPP 2013 School", 1-6 August, 2013, Djuronaset, Stockolm, Sweden, **Invited Lecture**, "Planck constraints on Fundamental Physics"
- 75. "Meeting PRIN", 16-17 May, 2013, Scuola Normale di Pisa, Pisa, Italy, **Invited Talk**, "Planck constraints on Fundamental Physics"
- 76. "NeXT Ph.D. Summer School", 17-19 June, 2013, Queen Mary College, London, UK **Invited Lectures**, "Planck constraints on Fundamental Physics"
- 77. "OMEG12 Conference", 12-18 November, 2013, KEK, Tsukuba, Japan, **Invited Plenary Talk**, "Planck constraints on Fundamental Physics"

- 78. "Cosmology on the Beach 2014", 11-17 January, 2014, Los Cabos, Mexico, **Invited Plenary Talk**, "Planck constraints on Fundamental Physics"
- 79. "Capri 2014 Flavour Physics Workshop", Villa Orlandi, Anacapri, Island of Capri (NA), Italy, on 23-25 May 2014, **Invited Plenary Talk**, "Planck constraints on Fundamental Physics"
- 80. "International School of Space Science", "Observing the Universe with the Cosmic Microwave Background", l'Aquila April 22-26, 2014. "Theory of the CMB".
- 81. "What Next ? workshop", Padova University, 1-2 December 2014, **Invited Talk**, " New constraints from Planck"
- 82. "Meeting on Fundamental Cosmology" Santander, 17-19 June 2015, **Invited Talk**, "Constraining Fundamental Physics with Fundamental Cosmology".
- 83. Ecole Internationale Daniel Chalonge , 19th Paris Cosmology Colloquium 2015, Observatoire de Paris, 22-24 July 2015. **Invited Talk**, "The cosmological data set analysis with Neutrinos and Sterile Neutrinos".
- 84. 43rd SLAC Summer Institute, 10-21 Aug 2015, Stanford, USA, **Invited Lectures**, "Neutrinos and Cosmology"
- 85. The 12th International Workshop Dark Side of the Universe 25-29 July 2016, University of Bergen, Norway, **Invited Plenary Talk**, "Anomalies and tensions in current cosmological data and hints for new physics"
- 86. NOW2016, Otranto (Lecce, Italy) September 4 - 11, 2016, **Invited Plenary Talk**, "Future precision cosmology and neutrinos"
- 87. ISAPP2016 - International School of Astroparticle Physics Physics and Astrophysics of Cosmic Rays in Space, University of Milano Bicocca - Milano (Italy), 12-20 September 2016, **Invited Lectures**, "Precision cosmology"
- 88. NOW2016, Otranto (Lecce, Italy) September 4 - 11, 2016, **Invited Plenary Talk**, "Future precision cosmology and neutrinos"
- 89. 5th GRAWITON School, GW Initial Training Network, Rome 24-28 October 2016, **Invited Lectures**, "Precision cosmology".
- 90. Towards a next space probe for CMB observations and cosmic origins exploration, 17-20 May 2016, CERN, Geneva, Switzerland, **Invited Talk**, "CMB constraints on fundamental physics"
- 91. Origin of Mass 2017 Cosmology and Dark Matter, Monday, May 1 to Thursday, May 4, 2017 CP3-Origins, SDU, Odense, Denmark. **Invited Plenary Talk**, "Anomalies and tensions in current cosmological data and hints for new physics"
- 92. ASI/COSMOS workshop, Rome Tor Vergata, 28-29 May 2019. **Invited Talk**, "Anomalies and tensions in current cosmological data and hints for new physics".

### Invited Seminars

- (1) "The Gravitational-Wave contribution to the CMB anisotropies", Seminars of the cosmology and particle physics groups, Physics Department University of Geneva , 5/2/1998.
- (2) "A flat universe from the North American test flight of Boomerang", Physics Department University of Geneva, 4/2/2000.
- (3) "A measurement of Omega from the Cosmic Microwave Background Anisotropies", TAC, Copenaghen, 10/4/2000.
- (4) "A measurement of Omega from the Cosmic Microwave Background Anisotropies", SISSA, Trieste, 11/5/2000.
- (5) "A new measurement of the curvature of the Universe with the BOOMERANG experiment", Laboratori Nazionali del Gran Sasso, 6/6/2000.
- (6) "Multiple Peaks in the Angular Power Spectrum of the Cosmic Microwave Background: Significance and Consequences for Cosmology", Seminars of the cosmology and particle physics groups, Physics Department University of Geneva, 8/6/2001.
- (7) "Cosmology through the eyes of BOOMERanG and Maxima", Seminars and Colloquia, Ecole Polythechnique de Lausanne, Losanna, 11/6/2001.

- (8) “Multiple Peaks in the Angular Power Spectrum of the CMB”, Center for Astroparticle Physics and Cosmology, Imperial College, London, 15/6/2001.
- (9) “Cosmologia attraverso Boomerang e Maxima”, Dipartimento di Fisica Teorica, Turin, 3/4/2001.
- (10) “Recent results from the Boomerang experiment”, CERN, Geneva, 31/1/2001.
- (11) “Cosmology with the Boomerang experiment”, Department of Physics and Astronomy, Sussex University, UK, 26/1/2001.
- (12) ‘Recent results from the Boomerang experiment”, Institute of Cosmology, Portsmouth, 15/3/2001.
- (13) ‘Multiple peaks in the CMB power spectrum’, DAMTP, Cambridge, 5/11/2001.
- (14) “Cosmological Parameters: Status and Prospects”, 15/5/2002, Physics Department, University of Birmingham, UK.
- (15) “Cosmological Parameters: Status and Prospects”, 12/7/2002, Osservatorio Astronomico di Arcetri, Firenze, Italia.
- (16) “Cosmological parameters: status and prospects” 6/5/2002, Rutgers, Physics and Astronomy Department, N.J., USA
- (17) “Multiple peaks in the CMB power spectrum”, 3/5/2002, Princeton, Physics Department, N.J. USA.
- (18) “Cosmological parameters: status and prospects”, 28/6/2002, Physics Department, Geneva, CH.
- (19) “Cosmological parameters: status and prospects”, 23/5/2002, Osservatorio di Capodimonte, Naples, Italy.
- (20) “CMB Anisotopries: Status and Prospects”, 30/4/2003, Physics Colloquia, University pf Zurich, CH.
- (21) “CMB Anisotropies: Status and Prospects”, 1/4/2003, Observatoire de Nice, Nice, France.
- (22) “New Constraints on Dark Matter and Dark Energy”, 3/7/2004, Physics Department, Rome.
- (23) “Cosmological constraints from Microwave Background Anisotropy and Polarization”, 23/6/2004, Dipartimento di Fisica, Universita’ di Bari, Italy.
- (24) “Cosmological constraints on Neutrino Mass”, 3/12/2004, Caltech, California, USA
- (25) “Cosmological constraints on Neutrino Physics”, 21/6/2005, Physics Department, Helsinki, Finland.
- (26) “Cosmological constraints on Neutrino Mass”, 14/7/2005, Tor Vergata University, Rome, Italy.
- (27) “Latest news from the Universe”, 24/8/2005, Werner Heisenberg Institut, Munich, Germany.
- (28) “Dark Energy in the Universe”, 6/10/2005, Physics Department, University of Barcelona, Spain.
- (29) “Dark Energy in the Universe”, 11/11/2005, Physics Department, University of Chicago, U.S.A..
- (30) “Dark Energy in the Universe”, 16/11/2005, Physics and Astronomy Department, Cornell University, U.S.A..
- (31) “Dark Energy in the Universe”, 18/11/2005, Physics and Astronomy Department, Columbia University, U.S.A..
- (32) “Cosmological constraints on Neutrino Physics”, 17/2/2006, Physics Department, “ Universita’ Federico II”, Naples, Italy.
- (33) “Cosmological constraints on Neutrino Physics”, 12/5/2006, Physics Department, University of Salerno, Italy.
- (34) “Constraints on neutrino Physics from cosmology and their impact on world neutrino data”, 28/6/2006, Physics Department, UNAM, Mexico
- (35) “Dark Energy in the Early Universe”, 23/1/2007, Scuola Normale Superiore, Pisa, Italy.
- (36) “Dark Energy in the Early Universe”, 31/1/2007, Physics Department, University of Ferrara, Italy.
- (37) “Dark Energy in the Early Universe”, 1/2/2007, ICTP, Trieste, Italy.

- (38) “I Confini dell’Universo”, 8/2/2007, Accademia dei Lincei, Rome, Italy.
- (39) “New Constraints on the Dark Side of the Universe”, 11/11/2007, DESY, Hambourg, Germany.
- (40) “Exploring the Dark Energy Redshift Desert with the Cosmic Velocity Shift”, 21/11/2007, CERN, Geneva, Switzerland.
- (41) “New Constraints on the Cosmological Dark Side”, 14/12/2007,UAM, Madrid, Spain
- (42) “New Cosmological Constraints on Neutrino Parameters “, 6/12/2007, LAPTH, Annecy, France
- (43) “New Cosmological Constraints on Neutrino Parameters “, 22/11/2007, CERN, Geneva, Switzerland
- (44) “New Cosmological Constraints on Neutrino Parameters “, 27/2/2008, INAF/IASF, Bologna, Italy
- (45) ”New Constraints from Cosmic Microwave Background Anisotropies”, 13/4/2008, Scuola Normale Superiore, Pisa.
- (46) ”New Constraints from Cosmic Microwave Background Anisotropies”, 15/1/2009, APC, Universite’ de Paris, Paris.
- (47) ”New Constraints from Cosmic Microwave Background Anisotropies”, 10/3/2009, SISSA, Italy.
- (48) ”New Cosmological Constraints on Neutrino Physics”, 31/3/2009, LUTH, Paris.
- (49) “Fundamental Physics from CMB anisotropies”, 14/1/2010, University of Valencia, Spain.
- (50) ”Inspirational Lecture on Cosmology”, 25/5/2011, DARK, Copenaghen, Denmark.
- (51) ”New Cosmological Constraints on Neutrino Physics”, 22/6/2011, Astronomy Department, University of San Diego, San Diego, CA, USA.
- (52) ”New Results On Cosmic Microwave Background Anisotropies”, 4/7/2012, ICTP, Sao Paulo, Brazil.
- (53) ”Planck constraints on Fundamental Physics”, 19/4/2013, Observatory of Monte Porzio, Rome, Italy
- (54) ”Planck constraints on Fundamental Physics”, 22/4/2013, University of Madrid Autonoma, Madrid, Spain.
- (55) ”Planck constraints on Fundamental Physics”, 29/5/2013, LNF-INFN, Rome, Italy.
- (56) ”Planck constraints on Fundamental Physics”, 17/9/2013, Kavli Institute, Stanford, California, USA.
- (57) ”Planck constraints on Fundamental Physics”, University of Manchester, 1/11/2018, UK
- (58) ”A crisis in Lalalambda land ?”, Gran Sasso INFN laboratories, 4/12/2019, Italy.
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## Publications on refereed journals

**Short Summary:** According to the NASA/ADS database, I am co-author of **378** refereed papers, (among them **137** published in Astronomy & Astrophysics, **126** in Physical Review D, **30** in JCAP, **18** in the Astrophysical Journal, **9** in MNRAS, **6** in Physical Review Letters, **6** in Physics Letters B, **2** in Nature/Nature astronomy, **1** in Physics Report).

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