

Curriculum Vitae of **SABINO MATARRESE**

SABINO MATARRESE is Full Professor (Professore Ordinario di Ia fascia: SSD FIS/05) in Astronomy & Astrophysics at the Physics & Astronomy Department “Galileo Galilei” of the University of Padova (UNIPD), Italy.

ACADEMIC CAREER Master (Laurea) degree in Astronomy at Padova University (UNIPD) in 1980. Fellowship at SISSA, Trieste (1980-1983) with Magister Philosophiae in Astrophysics awarded in 1982. Researcher in Theoretical Physics at SISSA (1984-1986) and at UNIPD (1986-1992). Associate Professor in Astrophysics at UNIPD (1992-2000). Visiting Professor for 1-yr at the Max-Planck-Institut für Astrophysik, Garching (DE) 1999-2000. Full Professor in Astrophysics at UNIPD (2000-present).

TEACHING Fundamentals of Astrophysics and Cosmology for master students at UNIPD (since 2000); Theoretical Cosmology for master students at UNIPD (since 1992); Cosmology and Particle Physics for the ICTP Diploma Course (1992); Early Universe Cosmology for PhD students at SISSA (since 1987); Cosmology for PhD students at Scuola Normale Superiore in Pisa (in the early 2000's); Cosmology for PhD students at the Gran Sasso Science Institute – GSSI, L'Aquila (since 2014). I have been the supervisor of more than 100 Master theses in Padova, Bologna, Milano, Pisa. I have been the supervisor of more than 20 PhD students in Padova, SISSA-Trieste, Pavia, Milano, Roma, GSSI-L'Aquila, Marseille. Around 30 scientists among my past master and PhD students hold faculty positions in the best universities in Italy and abroad.

RESEARCH INTERESTS Cosmology and Astroparticle Physics: temperature anisotropies and polarization of the Cosmic Microwave Background (CMB); inflation in the early universe, generation of cosmological perturbations and gravitational waves; primordial non-Gaussianity; formation of large-scale structures (LSS), non-linear evolution of cosmological perturbations, models of dynamical dark energy and modified gravity, back-reaction of cosmological perturbations.

I have played a pioneering role at the international level in some key-subjects of modern cosmology, such as: i) study of the generation of primordial non-Gaussianity and its observational consequences in the CMB anisotropies and LSS, ii) analysis of cosmological perturbations beyond linear theory both in the Newtonian approximation and accounting for General Relativistic effects. Because of these reasons, I have been invited to write review papers on these subjects on international journals with high impact factor. I have coordinated the activity of data analysis for the Planck mission in connection with primordial non-Gaussianity and I have been invited to give the introductory or concluding talks at several international conferences devoted to such topics.

MEMBERSHIP AND COORDINATION ACTIVITY Associate member of the National Institute of Nuclear Physics (INFN) and National Institute of Astrophysics (INAF). National coordinator of a Working Group (PD51) on Cosmology & Astro-particle Physics for INFN for the period 2000-2011. National coordinator of a research

project on the Early Universe for the Italian Space Agency (ASI) for the period 2007-2010. Board Member of the Italian Society of General Relativity & Gravitation (SIGRAV) until 2018. SOC member of many international and national conferences and workshops (typically 2-3 international conferences per year during the last ~ 15 years). President of the Astrophysics Section of the National Conference of the Italian Physical Society (SIF) in 2016. Member of the Italian Cosmology Coordination Committee since 2020, Member (“*Socio Corrispondente*”) of the *Accademia Galileiana di Scienze Lettere ed Arti in Padova*, since 10th November 2019.

PARTICIPATION IN INTERNATIONAL COLLABORATIONS Member of the *Planck* (ESA space mission) collaboration: *Planck* scientist, LFI Core-Team member and LFI coordinator of the core project on Primordial non-Gaussianity. Member of the *Planck* Editorial Board. Member of the Euclid space mission. Member of the LISA space mission. Member of the Crio-Spazio Consortium Board, in support of the LISA-Pathfinder ESA space mission. Member of the Editorial Board of the LSPE experiment.

EDITORIAL ACTIVITY Referee of the main journals in astrophysics and high-energy physics (PRD, PRL, ApJ, ApJL, A&A, MNRAS, JCAP, JHEP, Science, CQG and others). Co-editor of the book "Dark Matter and Dark Energy: a Challenge for Modern Cosmology", 2011, Canopus-Springer (Berlin). Editorial Board member of the journals "*Rivista del Nuovo Cimento*" and "*Galaxies*". Member of the *Planck* and LSPE collaborations Editorial Board.

PARTICIPATION IN SELECTION PANELS National coordinator of the panel for the evaluation of research in Astronomy & Astrophysics of Italian Universities/Research Centers for the periods 2004-2010 and 2011-2014. Member of the national panel for the selection of young researchers (SIR: "Scientific Independence of young Researchers") for the ERC field PE9, 2014 call. Panel member for the selection of professorships/young researchers and funding of scientific projects in Italy, EU, UK, France, Denmark, Germany, Netherlands, Switzerland, Finland, Canada, Israel, Chile, Mexico, New Zealand, etc...

GRANTS AND AWARDS Besides the national and local coordination of ASI and INFN grants, I have been the national coordinator of two COFIN (PRIN) projects (2002, 2009) financed by the Italian Ministry of University and Research (MIUR) as well as of various projects financed by INAF and UNIPD. Coordinator of the UNIPD node of the ASI national agreements "COSMOS" and "LiteBIRD". Awarded, as *Planck* Team member, the "2018 Royal Astronomical Society Group Achievement Award 'A' *Planck* Team". Awarded, as *Planck* Team member, the "*Gruber Cosmology Prize 2018*". Awarded, as *Planck* Team member, the "2019 Division Giuseppe and Vanna Cocconi Prize" by the European Physical Society (EPS) High Energy and Particle Physics Division.

SEMINARS I have given a very large number of seminars and colloquia in many Universities and Research Centers at the International level (to mention some of them: Paris IAP, Paris Pascal Inst., ETH Zurich, CERN, Accademia dei Lincei, Rome, ESO-Munich, Institute of Theoretical Physics Oslo, University of Chicago, Niels-

Bohr Institute Copenhagen, Scuola Normale Superiore Pisa, and many more), as well as in many international schools, and I have given a large number of invited talks in international Workshops. I have been the Director of several international and national PhD schools in Cosmology. I have given several public outreach seminars in Italy and abroad.

PUBLICATIONS 429 articles published (or accepted for publication) in international refereed journals. 6 articles submitted to international refereed journals, plus ~100 publications including invited lectures at schools and conferences, white papers, contributions to conference proceedings, etc. and ~10 articles devoted to cosmology outreach.

CITATIONS AND BIBLIO-METRIC INDICES. ADS/NASA database: total number ~69000, h-index=113; Inspire database: total number ~67600, h_{HEP}-index=105; ISI-WoS database: total number ~47000, h-index=97; Scopus database: total number ~35800, h-index=82; Google Scholar database: total number ~69300, h-index=114.

20 SELECTED PUBLICATIONS

- *Anisotropies and non-Gaussianity of the cosmological gravitational-wave background.* Physical Review **D100** (2019) 12501(R)-1 – 12501(R)-7. N. Bartolo, D. Bertacca, S. Matarrese, M. Peloso, A. Ricciardone, A. Riotto, G. Tasinato
- *Planck 2015 Results XVII. Constraints on primordial non-Gaussianity.* Astronomy & Astrophysics **594** (2016) A17-1 – 66. Planck Collaboration: P. A. R. Ade et al. (including S. Matarrese)
- *The two faces of mimetic Horndeski gravity: disformal transformations and Lagrange multiplier.* Journal of Cosmology and Astroparticle Physics **1509** (2015) 051-0 – 19. Arroja, N. Bartolo, P. Karmakar, S. Matarrese
- *Planck 2013 Results XXIV. Constraints on Primordial non-Gaussianity.* Astronomy & Astrophysics **571** (2014) A24-1 – 58. Planck Collaboration: P. A. R. Ade et al. (including S. Matarrese)
- *The Effect of Primordial Non-Gaussianity on Halo Bias.* Astrophysical Journal Letters **676** (2008) L77 - L80. S. Matarrese, L. Verde
- *Resumming Cosmic Perturbations.* Journal of Cosmology and Astroparticle Physics **0706** (2007) 026-1 – 26. S. Matarrese, M. Pietroni
- *On Cosmic Acceleration without Dark Energy.* New Journal of Physics **8** (2006) 322-1 – 24. E. W. Kolb, S. Matarrese, A. Riotto
- *Large-Scale Magnetic Fields from Density Perturbations.* Physical Review **D71** (2005) 043502-1 – 7. S. Matarrese, S. Mollerach, A. Notari, A. Riotto
- *Non-Gaussianity from Inflation: Theory and Observations.* Physics Reports **402** (2004) 103 – 266. N. Bartolo, E. Komatsu, S. Matarrese, A. Riotto
- *Gauge-Invariant Second-Order Perturbations and non-Gaussianity from Inflation.* Nuclear Physics **B667** (2003) 119 – 148. V. Acquaviva, N. Bartolo, S. Matarrese, A. Riotto
- *A Reconstruction of the Initial Conditions of the Universe by Optimal Mass Transportation.* Nature **417** (2002) 260 – 262. U. Frisch, S. Matarrese, R. Mohayaee, A. Sobolevski

- *The 2dF Galaxy Redshift Survey: The Bias of Galaxies and the Density of the Universe.* Monthly Notices of the Royal Astronomical Society **335** (2002) 432 – 440. L. Verde, A. F. Heavens, W. Percival, S. Matarrese et al.
- *The Abundance of High-Redshift Objects as a Probe of Non-Gaussian Initial Conditions.* Astrophysical Journal **541** (2000) 10 – 24. S. Matarrese, L. Verde, R. Jimenez
- *Relativistic Second-Order Perturbations of the Einstein-de Sitter Universe.* Physical Review **D58** (1998) 043504-1 – 22. S. Matarrese, S. Mollerach, M. Bruni
- *Large-Scale Bias in the Universe: Bispectrum Method.* Monthly Notices of the Royal Astronomical Society **290** (1997) 651 – 662. S. Matarrese, L. Verde, A. F. Heavens
- *General Relativistic Dynamics of Irrotational Dust: Cosmological Implications.* Physical Review Letters **72** (1994) 320 – 323. S. Matarrese, O. Pantano, D. Saez
- *A Frozen-Flow Approximation to the Evolution of Large-Scale Structures in the Universe.* Monthly Notices of the Royal Astronomical Society **259** (1992) 437 – 452. S. Matarrese, F. Lucchin, L. Moscardini, D. Saez
- *A Path-Integral Approach to Large-Scale Matter Distribution Originated by Non-Gaussian Fluctuations.* Astrophysical Journal Letters **310** (1986) L21 – L26. S. Matarrese, F. Lucchin, S. A. Bonometto
- *Power-Law Inflation.* Physical Review **D32** (1985) 1316 – 1322. F. Lucchin, S. Matarrese
- *On the Classical and Quantum Irrotational Motions of a Relativistic Perfect Fluid: I. Classical Theory.* Proceedings of the Royal Society of London **A401** (1985) 53 – 66. S. Matarrese