Personal information

Surname(s) / First name(s)	**Bonici, Marco**
Address(es)	Via Ceriallo 27, 16044, Cicagna (GE), Italy
Email(s)	marco.bonici@inaf.it
Nationality(-ies)	Italian
Date of birth	Apr 30 1993
Gender	male
Website	https://www.marcobonici.com

Current Position and Affiliations

PostDoc, IASF Milano (2021-today). Associated to Istituto Nazionale AstroFisica (INAF)

International Collaborations

Since 2018, member of the Euclid Consortium. I am particularly active in the Galaxy-Clustering Work Package Voids where I am leading the proposed “Euclid standard project” entitled “Forecasts from the void-lensing cross-correlation”. I am co-leading the analysis on the impact of the covariance and the cross-correlation between the Euclid 2D and 3D probes on the overall Euclid survey performance. I have also joined the group responsible of the developement of the official Euclid likelihood code. I am leading, with Dr. Carmelita Carbone, a Key Project in Euclid about alternative methods to speed up the likelihood computation.

Education and training

Place and Date	University of Genova, 2017 – 2021
Title of qualification awarded	PhD in Physics
Title of dissertation	Unveiling the Universe with gravitational lensing and cosmic voids
Supervisor(s)	Dr. Carmelita Carbone, Dr. Stefano Davini
Place and Date	University of Genova, 2015 – 2017
Title of qualification awarded	MSc in Physics
Title of dissertation	Towards a New Proposal for the Time Delay in Gravitational Lensing
Supervisor(s)	Prof. Nicola Maggiore, Prof. Nicodemo Magnoli
Final score	110 cum Laude
Final score	110 cum Laude
Place and Date	University of Genova, 2012 – 2015
Title of qualification awarded	BSc in Physics
Title of dissertation	Entropy and Irreversibility
Supervisor(s)	Prof. Giovanni Cassinelli
Final score	110 cum Laude

Teaching activity

In the academic years 2017/2018, 2018/2019 and 2019/2020 I won an assistentship (30 hours) of the faculty of Computer Engineering, preparing exercises for the course of General Physics. In the academic year 2016/2017 I was a tutor of the faculty of Mechanical Engineering, teaching Physics, Mathematical Analysis, Algebra.

Conferences

Machine Learning at GGI, (Firenze, 2022), oral contribution

Workshop on Cosmology organized by Berkeley Center for Cosmological Physics, (Vipolže, 2022), oral contribution

Debating the potential of Machine Learning in astronomical survey, (Paris, 2021), oral contribution
Barolo Astroparticle Meeting, (Barolo, 2021), oral contribution
Julia Annual conference, (online, 2021), oral contribution
Euclid Consortium Annual meeting, (Lausanne, 2021), oral contribution
Euclid Consortium Annual meeting, (Barcelona, 2020)
Meeting Nazionale Collaborazione Euclid, (Bologna 2020), oral contribution
Euclid Science meeting, (Paris, 2020), oral contribution
Euclid Consortium Annual meeting, (Helsinki, 2019)
Euclid and beyond: the many faces of Cosmology, (Roma, 2019)
Galaxy Clustering and Weak Lensing Euclid meeting, (Milano, 2018)
Congresso Nazionale Società Italiana di Fisica, (Cosenza, 2018), oral contribution
Universum Meeting (Bologna, 2018)
String Theory and Cosmology (Barga, 2017), oral contribution

Schools attended

Efficient Large Scale Computing, (Bertinoro, 2019), oral contribution
Computational Methods in Cosmology, (Cargese, 2018), oral contribution
Summer School on Cosmology, ICTP, 2018

List of Publications

M. Bonici, L. Biggio, C. Carbone, L. Guzzo, "Fast emulation of two-point angular statistics for photometric galaxy surveys, [arXiv:2206.14208 [astro-ph.CO]]

M. Bonici, C. Carbone, et al., Euclid Collaboration, Euclid: "Forecasts from the void-lensing cross-correlation" [arXiv:2206.14208 [astro-ph.CO]]

N. Hamaus et al., Euclid Collaboration "Euclid: Forecasts from redshift-space distortions and the Alcock-Paczynski test with cosmic voids," A&A **658**, A20 (2022) doi:10.1051/0004-6361/202142073 [arXiv:2108.10347 [astro-ph.CO]].

S. Contarini, G. Versa et al., Euclid Collaboration, "Euclid: Cosmological forecasts from the void size function", [arXiv:2205.11525 [astro-ph.CO]]

S. Davini, I. Risso, M. Scodeggio, L. Paganin, S. Caprioli, M. Bonici, A. Caminata, S. Di Domizio, G. Testera, S. Tosi, B. Valerio, M. Fumana, P. Franzetti "A proposal for relative in-flight flux self-calibrations for spectro-photometric surveys," PASP, **133** 084501 doi:10.1088/1538-3873/ac102e [arXiv:2103.15512 [astro-ph.IM]].

M. Bonici and N. Maggiore, "Constraints on interacting dynamical dark energy and a new test for ΛCDM,", Eur. Phys. J. C **79** (2019) no.8, 672 doi:10.1140/epjc/s10052-019-7198-1 [arXiv:1812.11176 [gr-qc]].

N. Alchera, M. Bonici, R. Cardinale, A. Domi, N. Maggiore, C. Righi and S. Tosi, "Analysis of the angular dependence of time delay in gravitational lensing," Symmetry **10** (2018) no.7, 246 doi:10.3390/sym10070246 [arXiv:1804.03111 [astro-ph.CO]].

N. Alchera, M. Bonici and N. Maggiore, "Towards a new proposal for the time delay in gravitational lensing," Symmetry **9**, no. 10, 202 (2017) doi:10.3390/sym9100202 [arXiv:1709.09055 [astro-ph.CO]]

Grants

I won a MiniGrant from INAF, consisting in 18k € to develop my research project on Cosmology & Machine Learning

About 80k hours of computing time at the High-Performance-Computing Center Cineca (Bologna, Italy)

Personal skills and competences

Mother tongue(s) **Italian**

Other language(s) English

Self-assessment
European level(*)

Understanding		**Speaking**		**Writing**
Listening	Reading	Spoken interaction	Spoken production	
excellent	excellent	good	good	good

English

For more information write me

(*) *Common European Framework of Reference (CEF) level*

Computer skills and competences

I have an excellent knowledge of Julia, Python, C++, Mathematica. I am familiar with the scientific codes CAMB, CLASS, HEALPix, Astropy, TensorFlow, JAX, Flux, PyTorch, TensorFlow. I have been the major developer of the Python code, SEYFERT, to perform forecasts on cosmological parameters measurements; the code will be soon released. I am the main developer and mantainer of CosmoCentral.jl, a Julia package that can perform Fisher Forecasts and MonteCarlo analysis of cosmological datasets; the code is publicly released and can be found on my GitHub account. I am familiar with Ubuntu, CentOS and Windows.

Personal Skills

Since High School, I have been giving private lectures of Mathematical Analysis, Physics, Algebra and engineering subjects such as Psychometrics, Acoustics, Building Science, Applied Thermodynamics. I love writing and I won with my classmates the first edition of "GnE: Giornalisti nell'Erba". I joined my High School Team of Mathematics Olympics, reaching the final in Cesenatico. I am an educator with other volunteers, working expecially with 14/18-years-old boys and girls. I have also worked with homeless and I spent 2 weeks in Ventimiglia for the immigrants emergency.

Personal interests

I am an omnivorous reader: I read from Dostoevskij to Saramago, from Pirandello to Follett, from Asimov to Martin. I love theatre, hiking, TV series. I have completed an improvisational theatre course and I am an amateur stand-up comedian.