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- **Research experience:**

From September 2023: Researcher (RTD-b) at University of Trieste.

From September 2020 to August 2023: Researcher (RTD-a) at University of Trieste.

From October 2018 to August 2020: Postdoctoral researcher at INAF – Osservatorio Astronomico Trieste.

From January 2015 to October 2018: Postdoctoral research assistant at the University Observatory of Munich – Ludwig Maximilian University of Munich.

Main research activities:

- Analysis of optical, SZ and X-ray selected cluster catalogs for cosmological parameter inference.
- Statistical inference, regression techniques and likelihood modeling for cluster cosmology studies (number counts, clustering of clusters, cluster lensing) and multi-probe analysis.
- Modelling and characterization of cluster catalogs (calibration of observable-mass scaling relations, observational systematics, selection function) by means of

multi-wavelengths and synthetic data analysis.

- Galaxy clusters as probes of fundamental physics and non-standard cosmological models.

Teaching and supervision activities:

("ASN professore seconda fascia SC 02/C1" since 05/06/2023)

- Co-holder of the PhD course in physics: Formation of Cosmic Structures, University of Trieste, 12hrs (since 01/03/2021)
- Co-holder of the bachelor degree physics course "Data representation and modeling techniques", University of Trieste, 12 hrs (since 01/10/2023)
- Co-holder of the bachelor degree course "Environmental physics", University of Trieste, 48 hrs (since 01/10/2023)
- Co-holder of the master degree physics course "Observational Cosmology", University of Trieste, 24 hrs (since 01/10/2023)
- Co-holder of the master degree physics course "Fundamentals of Astrophysics and Cosmology", University of Trieste, 12 hrs (since 01/10/2023)
- Co-holder of the bachelor degree course "Fisica Generale" (GEOLOGIA - L-34), University of Trieste, 24 hrs (since 01/03/2021 to 01/09/2023)
- Co-holder of the bachelor degree course "Fisica Applicata" (Tecniche prevenzione ambiente e luoghi lavoro - L/SNT4), University of Trieste, 20 hrs (since 01/10/2022 to 30/09/2023)
- Assistant for bachelor and master degree physics exams (since September 2020): Cosmology I (Prof. P. Monaco), Fisica I (M. Girardi), Fundamentals of Astrophysics and Cosmology (Prof. A. Saro).
- Lecturer for astrophysics seminars at the master degree courses in physics (since March 2020): "Cosmology I" (Prof. P. Monaco, University of Trieste) "Fundamentals of Astrophysics and Cosmology" (Prof. A. Saro, University of Trieste)
- Lecturer for the Galaxy Clusters Cosmology and Astrophysics seminar at the PhD school "Advanced Euclid School, Les Houches" (June 2020)
- Professor assistant for bachelor and master degrees physics courses: Essential Astrophysics, Cosmology & large-scale structures, Computational method in Astrophysics, Statistical Methods. One course per semester; ~3 hrs per week (from

January 2015 to July 2018, course holder Prof. J. Weller, Ludwig Maximilian University of Munich).

- Co-supervisor for master degree thesis (Bianco Michele, Master Thesis: Effect of Large Scale Structure Correlation on Cluster Counts. 2017; supervisor: Prof. J. Weller, Ludwig Maximilian University of Munich)
- Co-supervisor of PhD student (Steffen Hagstotz, PhD Thesis: Large Scale Structure Probes of Accelerated Expansion. 2018; supervisor: Prof. J. Weller, Ludwig Maximilian University of Munich)
- Co-supervisor of PhD student (Alessandra Fumagalli, PhD Thesis: Precision cosmology with galaxy clusters: preparing for the Euclid survey. from Jan 2020 to Feb 2023; supervisor: Prof. A. Saro, University of Trieste)
- Examiner for the Master degree thesis “Identification of substructures in cosmological simulations with Machine Learning methods” by Michela Esposito, University of Trieste (May 2022)

Collaborations and leading roles:

- Member of the Euclid Consortium (since January 2012)
- **Co-leader** of the Likelihoods Work Package of the Euclid Clusters of Galaxies Science Working Group (since January 2016)
- Member of the Dark Energy Survey Collaboration (since November 2015)
- **Co-leader** of the Dark Energy Survey Cluster Cosmology Project Year 1 (from 12/2016 to 11/2017) and Year 3 (from 12/2017 to 06/2021)
- **Co-leader** of the Cluster Working Group of the Dark Energy Survey (since July 2021)
- Member of the External Collaborator Review Committee for the Dark Energy Survey Collaboration (since October 2021)
- Member of the eRosita Cluster Working group (from 04/2015 to 10/2018)
- Member of the LSST Collaboration (since May 2019)
- Associated with Istituto Nazionale di Astrofisica (INAF) since November 2020.
- Member of the Institute for Fundamental Physics of the Universe (IFPU) since December 2018.

- Member of the Spoke 3 “Astrophysics & Cosmos Observations” of Centro Nazionale HPC since June 2022.

- Co-investigator of the observational program entitled “Empowering optical cluster cosmology with GMOS” at Gemini Observatory (from 01/06/2019 to 31/12/2019).
- Co-investigator of the observational program entitled “Enabling precision optical cluster cosmology with WIYN” at Kitt Peak National Observatory (from 01/01/2020 to 31/05/2020).
- Co-investigator of the computational time grants “Frontiers of Cluster Cosmology” at CINECA (PI L. Salvati, 125000 CPU h; from 15/07/2020 to 31/12/2020).
- PI of national grant PRIN 22 “EMC2 - Euclid Mission Cluster Cosmology: unlock the full cosmological utility of the Euclid photometric cluster catalog” (2023 - 2025)

Awards and grants:

- Dark Energy Survey builder status (since May 2019)
- “Cultore della Materia SSD FIS/05” (since March 2020)
- Microgrant to support young researcher University of Trieste (4K€ – 07/2021-06/2023)
- PRIN 22 grant (236K€ – 2023 - 2025)

Evaluation of research:

- Journals referee for: “Astronomy & Astrophysics”, “The Astrophysical Journal” “Monthly Notices of the Royal Astronomical Society”
- Evaluator of grant proposal for the Spanish Research Agency (Agencia Estatal de Investigación)
- Evaluator of grant proposal Progetti di ricerca di Rilevante Interesse Nazionale (PRIN)
- Evaluator of grant proposal for the Swiss National Science Foundation

- **Education:**

Ph.D in Physics at the University of Trieste (from 01/2012 to 12/2014).

Supervisors: Prof. Stefano Borgani (University of Trieste, INAF-OATs) and Dr. Matteo Viel (SISSA).
Ph.D project title: Neutrino constraints from the analysis of the large scale structure of the Universe.
Main research topics: Neutrino physics and massive neutrino cosmology; Parameter constraints from CMB and LSS data; Cosmology with galaxy clusters; Sampling methods for Bayesian inference.

Master degree, Astrophysics and Cosmology, University of Trieste, Trieste, Italy (10/2009-11/2011)

Principal subjects: astrophysics, cosmology, theoretical physics, computer science.
Thesis title: Constraints on neutrino mass from future surveys of galaxy clusters.
Thesis supervisors: Prof. Stefano Borgani (University of Trieste, INAF-OATs) and Dr. Matteo Viel (SISSA).
Graduated with score 110/110 cum laude

Bachelor degree, Physics, University of Perugia, Perugia, Italy (10/2005-2/2009) – University of Granada, Granada, Spain (**Erasmus programme**: 10/2007-3/2008)

Principal subjects: physics, calculus, computer science.
Thesis title: Nucleosynthesis and non-convective mixing processes in red giant stars.
Thesis supervisor: Prof. Maurizio Busso (INFN-PG)
Graduated with score 110/110

- **Overview of research activities:**

My research interests lie in the field of theoretical and observational cosmology with large scale structures, with focus on galaxy clusters.

Galaxy clusters are the largest gravitationally bound systems in the Universe, and as such they provide a unique laboratory where to study gravitational structure formation, galaxy evolution, thermodynamics of the intergalactic medium and plasma physics.
Moreover, arising from the high density peaks of the initial matter distribution, the galaxy cluster population bears the imprints of the statistical properties of the matter density field and its evolution, making them a valuable cosmological tool. Despite this potential, the cosmological utility of galaxy clusters is primarily limited by our ability to calibrate the relation between halo masses and observable mass proxies and to derive accurate theoretical predictions for their spatial number density (the halo mass function) and clustering properties.

At the beginning of my research activity, I focused my studies on the effects of massive neutrinos on the evolution of cosmic structures, and in turn, on the statistical properties of the galaxy cluster population. By means of N-body simulations including dark matter and neutrino particles, I and collaborators worked on the **calibration of the halo mass function in cosmology with massive neutrino** [185]. Later on, we made use of the results of this study to derive **constraints on the neutrino and sterile neutrino masses** from the combination of a X-ray selected cluster catalog and other cosmological probes [184].
Early on during my PhD I joined the Cluster of Galaxies Science Working Group of the Euclid

Collaboration[1]. In this context, I carried out a project aimed at exploring the cosmological information carried by the cluster catalog that will be provided by the photometric survey of the ESA's Euclid mission, focusing on neutrino and dark energy constraints from cluster counts and clustering of clusters [186].

During my first postdoc I joined the Dark Energy Survey[2] (DES) collaboration, which gave me the opportunity to work with state-of-the-art photometric survey data. Within the DES collaboration my research activity has been mainly devoted to the characterization and analysis of the optically selected cluster catalog provided by DES, redMaPPer. In particular, **I co-led one of the 4 key cosmological projects of the Dark Energy Surveys: Cluster Cosmology.** Within this effort I have led and co-led several analyses which led to peer-reviewed publications:

- Calibration of the selection function of the optically selected cluster catalogs redMaPPer SDSS and DES Year 1 (Y1) [181].
- **Development, implementation and validation of the DES cluster cosmology pipeline** [176].
- Cluster abundance analysis of the redMaPPer DES Y1 cluster catalog [155; **project coordinator**].
- Constraints from cluster abundances on modified gravity Hu-Sawiki f(R) model [179].

For my contributions to the DES Collaboration I have been **awarded the builder status** in 2019, which granted me the data rights to continue my research with DES data also in non-host institutions.

Over the past few years, I took part in many studies aimed at exploring different aspects of cluster physics or exploiting clusters as a cosmological tool. In particular, I have been involved in the:

- Measurement and characterization of the clusters two point correlation function from SDSS data [182].
- Weak lensing mass calibration of the redMaPPer DES Y1 cluster sample [175, 180].
- Study of the cosmological dependence of galaxy clusters scaling relations [166].
- Characterization and analysis of the X-ray selected cluster catalog CODEX [131, 163].
- Multi-probe analysis of the DES Y1 data set, which combines cluster counts and two point correlation function with galaxy and lensing clustering statistics [124, 127].
- Study of the contamination fraction in the DES Y1 cluster sample by cross-matching with a SZ-selected cluster catalog [120].
- Analysis of spectroscopic data for the calibration of projection effects affecting optically selected cluster catalogs [117].

[1] http://www.euclid-ec.org
[2] http://www.darkenergysurvey.org

- Joint cosmological analysis of the Planck and South Pole Telescope SZ-selected cluster catalogs [62]
- Joint cosmological analysis of a SZ-selected clusters catalog with Lyman-α forest data [57].
- Characterization of the weak leaning selection bias for optically selected clusters [54]
- Cosmological constraints from the joint analysis of redMaPPer SDSS cluster counts, clustering and lensing [7]

Recently, I led a project aimed at combining the DES Y1 optical cluster catalog and the multiwavelength data collected within the mm-wavelength South Pole Telescope surveys (SPT). This study, done in collaboration with the DES and SPT collaborations, proved the capability of multiwavelength data to improve our control over systematics affecting the mass calibration, and provided **the first cosmological constraints from a combined optically-SZ selected cluster catalog** [134].

I am currently involved in several other projects aimed at improving our understanding of cluster physic and exploit galaxy cluster catalogs from large surveys as cosmological probes:

Within the DES Collaboration **I am co-leading the DES Year 3 Cluster Cosmology Project** aimed at analyzing the forthcoming redMaPPer DES Year 3 cluster catalog, and collaborating to different studies devoted to improve our understanding of the different systematics affecting cluster analyses and weak lensing mass calibration studies.

In July 2021 I become one of the **coordinator of the Cluster Working Group of DES**; the working group, which includes over 100 members from international institutions, collects all the “key projects” and “analysis teams” involved in the astrophysical and cosmological analysis of the optical cluster sample produced by DES.

I am also actively involved in two of the main next-generation optical surveys: Euclid and LSST. For what concerns the Euclid Collaboration, **I am co-leading the Likelihoods Working Package of the Clusters of Galaxies Science Working Group**. The aim of this working group is to develop the theoretical framework and pipeline which will be used to analyze the forthcoming cluster catalog of the Euclid survey (e.g. [86]). Within this Working Package **I am coordinating** the implementation and validation of the Euclid cluster cosmology pipeline.

Within the CG SWG I contributed to Pre-Launch projects:
- Calibration of baryonic effects on the halo mass function [2]
- Calibration of covariance matrix for the two-point correlation function of galaxy clusters [5]
- Calibration of the halo mass function in $\nu\Lambda$CDM cosmologies [31]
- Effects of sample covariance on the number counts of galaxy clusters [116]

During my research activity I have acquired expertise in the analysis of real and simulated, X-ray, SZ and optical cluster catalogs, which will be valuable for the cosmological exploitation of next-generation cluster surveys. In particular, the characterization and analyses of the optical-selected SDSS and DES cluster catalogs that I have been carrying out can provide a fundamental test case for the analysis of future optical galaxy clusters surveys, such as Euclid and LSST.

My involvement in many international collaborations, gave me the opportunity to establish a productive and continuous collaboration with many research groups all around the world, as proven by my publications list. Moreover, thanks to the leading roles covered in the past years I have acquired experience in coordinating small to medium-sized heterogeneous research teams and meeting milestones.

- **Publications:**

186 publications
Citations: 8091 (629 as first/corresponding author)
h-index: 47
From NASA/ADS web site (ORCID: 0000-0001-8158-1449; June 2024)

List of Publications:

[1] Dark Energy Survey Year 6 results: Intra-cluster light from redshift 0.2 to 0.5 - Zhang, Y., et al. (2024), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stae1165

[2] Euclid preparation. XXXIX. The effect of baryons on the halo mass function - Euclid Collaboration, et al. (2024), Astronomy and Astrophysics, DOI: 10.1051/0004-6361/202348388

[3] Dark Energy Survey Year 3 results: Simulation-based cosmological inference with wavelet harmonics, scattering transforms, and moments of weak lensing mass maps. Validation on simulations - Gatti, M., et al. (2024), Physical Review D, DOI: 10.1103/PhysRevD.109.063534

[4] Examining the self-interaction of dark matter through central cluster galaxy offsets - Cross, D., et al. (2024), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stae442

[5] Euclid preparation. XXXV. Covariance model validation for the two-point correlation function of galaxy clusters - Euclid Collaboration, et al. (2024), Astronomy and Astrophysics, DOI: 10.1051/0004-6361/202245540

[6] Galaxy Clusters Discovered via the Thermal Sunyaev-Zel'dovich Effect in the 500-square-degree SPTpol Survey - Bleem, L. E., et al. (2024), The Open Journal of Astrophysics, DOI: 10.21105/astro.2311.07512

[7] Cosmological constraints from the abundance, weak lensing, and clustering of galaxy clusters: Application to the SDSS - Fumagalli, A., et al. (2024), Astronomy and Astrophysics, DOI: 10.1051/0004-6361/202348296

[8] Cosmological shocks around galaxy clusters: a coherent investigation with DES, SPT, and ACT - Anbajagane, D., et al. (2024), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad3726

[9] Dark Energy Survey Year 3 results: redshift calibration of the MAGLIM lens sample from the combination of SOMPZ and clustering and its impact on cosmology - Giannini, G., et al. (2024), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad2945

[10] Designing an Optimal Kilonova Search Using DECam for Gravitational-wave Events - Bom, C. R., et al. (2024), The Astrophysical Journal, DOI: 10.3847/1538-4357/ad0462

[11]A sample of dust attenuation laws for Dark Energy Survey supernova host galaxies - Duarte, J., et al. (2023), Astronomy and Astrophysics, DOI: 10.1051/0004-6361/202346534

[12] The intrinsic alignment of red galaxies in DES Y1 redMaPPer galaxy clusters - Zhou, C., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad2712

[13] The Dark Energy Survey Year 3 high-redshift sample: selection, characterization, and analysis of galaxy clustering - Sánchez, C., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad2402

[14] The PSZ-MCMF catalogue of Planck clusters over the DES region - Hernández-Lang, D., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad2319

[15] The Dark Energy Survey Year 3 and eBOSS: constraining galaxy intrinsic alignments across luminosity and colour space - Samuroff, S., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad2013

[16] Identification of Galaxy-Galaxy Strong Lens Candidates in the DECam Local Volume Exploration Survey Using Machine Learning - Zaborowski, E. A., et al. (2023), The Astrophysical Journal, DOI: 10.3847/1538-4357/ace4ba

[17] Modelling galaxy cluster triaxiality in stacked cluster weak lensing analyses - Zhang, Z., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad1404

[18] The XMM cluster survey: exploring scaling relations and completeness of the dark energy survey year 3 redMaPPer cluster catalogue - Upsdell, E. W., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad1220

[19] OzDES Reverberation Mapping Programme: Mg II lags and R-L relation - Yu, Z., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad1224

[20] Dependency of high-mass satellite galaxy abundance on cosmology in Magneticum simulations - Ragagnin, A., et al. (2023), Astronomy and Astrophysics, DOI: 10.1051/0004-6361/202142392

[21] Mapping gas around massive galaxies: cross-correlation of DES Y3 galaxies and Compton-y maps from SPT and Planck - Sánchez, J., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad1167

[22] Ultracool dwarfs candidates based on 6 yr of the Dark Energy Survey data - dal Ponte, M., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad955

[23] Non-local contribution from small scales in galaxy-galaxy lensing: comparison of mitigation schemes - Prat, J., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad847

[24] The Dark Energy Survey Supernova Program: Corrections on Photometry Due to Wavelength-dependent Atmospheric Effects - Lee, J., et al. (2023), The Astronomical Journal,

DOI: 10.3847/1538-3881/acca15

[25] The Effect of Splashback on Weak Lensing Mass Estimates of Galaxy Clusters and Groups - Zhang, Y., et al. (2023), The Open Journal of Astrophysics, DOI: 10.21105/astro.2212.05406

[26] Robust sampling for weak lensing and clustering analyses with the Dark Energy Survey - Lemos, P., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac2786

[27] Characterizing the intracluster light over the redshift range 0.2 < z < 0.8 in the DES-ACT overlap - Golden-Marx, J. B., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad469

[28] Dark Energy Survey Year 3 results: Constraints on extensions to Λ CDM with weak lensing and galaxy clustering - Abbott, T. M. C., et al. (2023), Physical Review D, DOI: 10.1103/PhysRevD.107.083504

[29] OzDES Reverberation Mapping Program: Hβ lags from the 6-yr survey - Malik, U., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad145

[30] Core-collapse supernovae in the Dark Energy Survey: luminosity functions and host galaxy demographics - Grayling, M., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stad056

[31] Euclid preparation. XXIV. Calibration of the halo mass function in Λ(ν)CDM cosmologies - Euclid Collaboration, et al. (2023), Astronomy and Astrophysics, DOI: 10.1051/0004-6361/202244674

[32] Measurement of the mean central optical depth of galaxy clusters via the pairwise kinematic Sunyaev-Zel'dovich effect with SPT-3G and DES - Schiappucci, E., et al. (2023), Physical Review D, DOI: 10.1103/PhysRevD.107.042004

[33] Concerning colour: The effect of environment on type Ia supernova colour in the dark energy survey - Kelsey, L., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac3711

[34] Mapping variations of redshift distributions with probability integral transforms - Myles, J., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac3585

[35] Constraining the baryonic feedback with cosmic shear using the DES Year-3 small-scale measurements - Chen, A., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac3213

[36] Timing the r-process Enrichment of the Ultra-faint Dwarf Galaxy Reticulum II - Simon, J. D., et al. (2023), The Astrophysical Journal, DOI: 10.3847/1538-4357/aca9d1

[37] Joint analysis of Dark Energy Survey Year 3 data and CMB lensing from SPT and Planck. III. Combined cosmological constraints - Abbott, T. M. C., et al. (2023), Physical Review D, DOI: 10.1103/PhysRevD.107.023531

[38] Joint analysis of Dark Energy Survey Year 3 data and CMB lensing from SPT and P l a n c k . II. Cross-correlation measurements and cosmological constraints - Chang, C., et al. (2023), Physical Review D, DOI: 10.1103/PhysRevD.107.023530

[39] Joint analysis of Dark Energy Survey Year 3 data and CMB lensing from SPT and Planck. I. Construction of CMB lensing maps and modeling choices - Omori, Y., et al. (2023), Physical Review D, DOI: 10.1103/PhysRevD.107.023529

[40] The Dark Energy Survey Supernova Program results: type Ia supernova brightness correlates with host galaxy dust - Meldorf, C., et al. (2023), Monthly Notices of the Royal

Astronomical Society, DOI: 10.1093/mnras/stac3056

[41] STRIDES: automated uniform models for 30 quadruply imaged quasars - Schmidt, T., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac2235

[42] The Dark Energy Survey supernova program: cosmological biases from supernova photometric classification - Vincenzi, M., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac1404

[43] Consistent lensing and clustering in a low-S₈ Universe with BOSS, DES Year 3, HSC Year 1, and KiDS-1000 - Amon, A., et al. (2023), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac2938

[44] DeepZipper. II. Searching for Lensed Supernovae in Dark Energy Survey Data with Deep Learning - Morgan, R., et al. (2023), The Astrophysical Journal, DOI: 10.3847/1538-4357/ac721b

[45] Dark Energy Survey Year 3 results: Measurement of the baryon acoustic oscillations with three-dimensional clustering - Chan, K. C., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.106.123502

[46] Photometric Properties of Jupiter Trojans Detected by the Dark Energy Survey - Pan, J., et al. (2022), The Planetary Science Journal, DOI: 10.3847/PSJ/aca4d1

[47] Using host galaxy spectroscopy to explore systematics in the standardization of Type Ia supernovae - Dixon, M., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac2994

[48] Dark Energy Survey Year 3 results: Cosmological constraints from galaxy clustering and galaxy-galaxy lensing using the MAGLIM lens sample - Porredon, A., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.106.103530

[49] Cosmic shear in harmonic space from the Dark Energy Survey Year 1 Data: compatibility with configuration space results - Camacho, H., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac2543

[50] Dark Energy Survey Year 3 results: Cosmology with moments of weak lensing mass maps - Gatti, M., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.106.083509

[51] Dwarf AGNs from Optical Variability for the Origins of Seeds (DAVOS): insights from the dark energy survey deep fields - Burke, C. J., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac2262

[52] Measuring Cosmological Parameters with Type Ia Supernovae in redMaGiC Galaxies - Chen, R., et al. (2022), The Astrophysical Journal, DOI: 10.3847/1538-4357/ac8b82

[53] A galaxy-driven model of type Ia supernova luminosity variations - Wiseman, P., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac1984

[54] Optical selection bias and projection effects in stacked galaxy cluster weak lensing - Wu, H.-Y., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac2048

[55] Dark Energy Survey Year 3 results: Imprints of cosmic voids and superclusters in the Planck CMB lensing map - Kovács, A., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac2011

[56] Dark energy survey year 3 results: cosmological constraints from the analysis of cosmic shear in harmonic space - Doux, C., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac1826

[57] Weighing cosmic structures with clusters of galaxies and the intergalactic medium - Esposito, M., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac1825

[58] Dark Energy Survey year 3 results: Constraints on cosmological parameters and galaxy-bias models from galaxy clustering and galaxy-galaxy lensing using the redMaGiC sample - Pandey, S., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.106.043520

[59] The dark energy survey 5-yr photometrically identified type Ia supernovae - Möller, A., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac1691

[60] Velocity dispersions of clusters in the Dark Energy Survey Y3 redMaPPer catalogue - Wetzell, V., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac1623

[61] The DECam Local Volume Exploration Survey Data Release 2 - Drlica-Wagner, A., et al. (2022), The Astrophysical Journal Supplement Series, DOI: 10.3847/1538-4365/ac78eb

[62] Combining Planck and SPT Cluster Catalogs: Cosmological Analysis and Impact on the Planck Scaling Relation Calibration - Salvati, L., et al. (2022), The Astrophysical Journal, DOI: 10.3847/1538-4357/ac7ab4

[63] Dark Energy Survey Year 3 results: calibration of lens sample redshift distributions using clustering redshifts with BOSS/eBOSS - Cawthon, R., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac1160

[64] Superclustering with the Atacama Cosmology Telescope and Dark Energy Survey. I. Evidence for Thermal Energy Anisotropy Using Oriented Stacking - Lokken, M., et al. (2022), The Astrophysical Journal, DOI: 10.3847/1538-4357/ac7043

[65] Cross-correlation of Dark Energy Survey Year 3 lensing data with ACT and P l a n c k thermal Sunyaev-Zel'dovich effect observations. II. Modeling and constraints on halo pressure profiles - Pandey, S., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.105.123526

[66] Cross-correlation of Dark Energy Survey Year 3 lensing data with ACT and Planck thermal Sunyaev-Zel'dovich effect observations. I. Measurements, systematics tests, and feedback model constraints - Gatti, M., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.105.123525

[67] Dark Energy Survey Year 3 results: Cosmology from combined galaxy clustering and lensing validation on cosmological simulations - DeRose, J., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.105.123520

[68] Finding quadruply imaged quasars with machine learning - I. Methods - Akhazhanov, A., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac925

[69] Milky Way Satellite Census. IV. Constraints on Decaying Dark Matter from Observations of Milky Way Satellite Galaxies - Mau, S., et al. (2022), The Astrophysical Journal, DOI: 10.3847/1538-4357/ac6e65

[70] Dark Energy Survey Year 3 results: Exploiting small-scale information with lensing shear ratios - Sánchez, C., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.105.083529

[71] Dark energy survey year 3 results: High-precision measurement and modeling of galaxy-galaxy lensing - Prat, J., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.105.083528

[72] Dark Energy Survey Year 3 results: galaxy clustering and systematics treatment for lens galaxy samples - Rodríguez-Monroy, M., et al. (2022), Monthly Notices of the Royal

Astronomical Society, DOI: 10.1093/mnras/stac104

[73] Dark Energy Survey Year 3 results: marginalization over redshift distribution uncertainties using ranking of discrete realizations - Cordero, J. P., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac147

[74] Dark energy survey year 3 results: Cosmology with peaks using an emulator approach - Zürcher, D., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stac078

[75] SOAR/Goodman Spectroscopic Assessment of Candidate Counterparts of the LIGO/Virgo Event GW190814 - Tucker, D. L., et al. (2022), The Astrophysical Journal, DOI: 10.3847/1538-4357/ac5b60

[76] The Evolution of AGN Activity in Brightest Cluster Galaxies - Somboonpanyakul, T., et al. (2022), The Astronomical Journal, DOI: 10.3847/1538-3881/ac5030

[77] Lensing without borders - I. A blind comparison of the amplitude of galaxy-galaxy lensing between independent imaging surveys - Leauthaud, A., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab3586

[78] Multiwavelength optical and NIR variability analysis of the Blazar PKS 0027-426 - Guise, E., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab3457

[79] The Dark Energy Survey Bright Arcs Survey: Candidate Strongly Lensed Galaxy Systems from the Dark Energy Survey 5000 Square Degree Footprint - O'Donnell, J. H., et al. (2022), The Astrophysical Journal Supplement Series, DOI: 10.3847/1538-4365/ac470b

[80] The Observed Evolution of the Stellar Mass-Halo Mass Relation for Brightest Central Galaxies - Golden-Marx, J. B., et al. (2022), The Astrophysical Journal, DOI: 10.3847/1538-4357/ac4cb4

[81] Dark Energy Survey Year 3 results: A 2.7% measurement of baryon acoustic oscillation distance scale at redshift 0.835 - Abbott, T. M. C., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.105.043512

[82] Dark Energy Survey Year 3 Results: clustering redshifts - calibration of the weak lensing source redshift distributions with redMaGiC and BOSS/eBOSS - Gatti, M., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab3311

[83] The DES view of the Eridanus supervoid and the CMB cold spot - Kovács, A., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab3309

[84] Probing gravity with the DES-CMASS sample and BOSS spectroscopy - Lee, S., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab3129

[85] Synthetic galaxy clusters and observations based on Dark Energy Survey Year 3 Data - Varga, T. N., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab3269

[86] A Search of the Full Six Years of the Dark Energy Survey for Outer Solar System Objects - Bernardinelli, P. H., et al. (2022), The Astrophysical Journal Supplement Series, DOI: 10.3847/1538-4365/ac3914

[87] From the Fire: A Deeper Look at the Phoenix Stream - Tavangar, K., et al. (2022), The Astrophysical Journal, DOI: 10.3847/1538-4357/ac399b

[88] Dark Energy Survey Year 3 results: Cosmological constraints from galaxy clustering and weak lensing - Abbott, T. M. C., et al. (2022), Physical Review D, DOI:

10.1103/PhysRevD.105.023520

[89] Dark Energy Survey Year 3 results: Cosmology from cosmic shear and robustness to modeling uncertainty - Secco, L. F., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.105.023515

[90] Dark Energy Survey Year 3 results: Cosmology from cosmic shear and robustness to data calibration - Amon, A., et al. (2022), Physical Review D, DOI: 10.1103/PhysRevD.105.023514

[91] OzDES reverberation mapping program: Lag recovery reliability for 6-yr C IV analysis - Penton, A., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab3027

[92] Dark Energy Survey Year 3 Results: Deep Field optical + near-infrared images and catalogue - Hartley, W. G., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab3055

[93] Dark Energy Survey Y3 results: blending shear and redshift biases in image simulations - MacCrann, N., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab2870

[94] Dark Energy Survey Year 3 results: galaxy-halo connection from galaxy-galaxy lensing - Zacharegkas, G., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab3155

[95] Galaxy-galaxy lensing with the DES-CMASS catalogue: measurement and constraints on the galaxy-matter cross-correlation - Lee, S., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab3028

[96] Dark Energy Survey Year 3 results: galaxy sample for BAO measurement - Carnero Rosell, A., et al. (2022), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab2995

[97] Dark Energy Survey Year 3 Results: Measuring the Survey Transfer Function with Balrog - Everett, S., et al. (2022), The Astrophysical Journal Supplement Series, DOI: 10.3847/1538-4365/ac26c1

[98] Dark Energy Survey year 3 results: covariance modelling and its impact on parameter estimation and quality of fit - Friedrich, O., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab2384

[99] Probing Galaxy Evolution in Massive Clusters Using ACT and DES: Splashback as a Cosmic Clock - Adhikari, S., et al. (2021), The Astrophysical Journal, DOI: 10.3847/1538-4357/ac0bbc

[100] Dark Energy Survey Year 3 Results: Galaxy mock catalogs for BAO analysis - Ferrero, I., et al. (2021), Astronomy and Astrophysics, DOI: 10.1051/0004-6361/202141744

[101] The mass and galaxy distribution around SZ-selected clusters - Shin, T., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab2505

[102] Galaxy morphological classification catalogue of the Dark Energy Survey Year 3 data with convolutional neural networks - Cheng, T.-Y., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab2142

[103] OzDES Reverberation Mapping Programme: the first Mg II lags from 5 yr of monitoring - Yu, Z., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab2244

[104] C/2014 UN₂₇₁ (Bernardinelli-Bernstein): The Nearly Spherical Cow of

Comets - Bernardinelli, P. H., et al. (2021), The Astrophysical Journal, DOI: 10.3847/2041-8213/ac32d3

[105] Rates and delay times of Type Ia supernovae in the Dark Energy Survey - Wiseman, P., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab1943

[106] Pushing automated morphological classifications to their limits with the Dark Energy Survey - Vega-Ferrero, J., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab594

[107] Reducing Ground-based Astrometric Errors with Gaia and Gaussian Processes - Fortino, W. F., et al. (2021), The Astronomical Journal, DOI: 10.3847/1538-3881/ac0722

[108] Assessing tension metrics with dark energy survey and Planck data - Lemos, P., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab1670

[109] Galaxy clustering in harmonic space from the dark energy survey year 1 data: compatibility with real-space results - Andrade-Oliveira, F., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab1642

[110] Dark Energy Survey Year 3 results: Curved-sky weak lensing mass map reconstruction - Jeffrey, N., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab1495

[111] Dark Energy Survey Year 3 results: redshift calibration of the weak lensing source galaxies - Myles, J., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab1515

[112] Understanding the extreme luminosity of DES14X2fna - Grayling, M., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab1478

[113] The Dark Energy Survey supernova programme: modelling selection efficiency and observed core-collapse supernova contamination - Vincenzi, M., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab1353

[114] The Dark Energy Survey Data Release 2 - Abbott, T. M. C., et al. (2021), The Astrophysical Journal Supplement Series, DOI: 10.3847/1538-4365/ac00b3

[115] A Deeper Look at DES Dwarf Galaxy Candidates: Grus I and Indus II - Cantu, S. A., et al. (2021), The Astrophysical Journal, DOI: 10.3847/1538-4357/ac0443

[116] Euclid : Effects of sample covariance on the number counts of galaxy clusters - Fumagalli, A., et al. (2021), Astronomy and Astrophysics, DOI: 10.1051/0004-6361/202140592

[117] Spectroscopic quantification of projection effects in the SDSS redMaPPer galaxy cluster catalogue - Myles, J., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab1243

[118] Dark energy survey year 3 results: weak lensing shape catalogue - Gatti, M., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab918

[119] Constraints on dark matter to dark radiation conversion in the late universe with DES-Y1 and external data - Chen, A., et al. (2021), Physical Review D, DOI: 10.1103/PhysRevD.103.123528

[120] Exploring the contamination of the DES-Y1 cluster sample with SPT-SZ selected clusters - Grandis, S., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab869

[121] Dark Energy Survey Year 3 Results: Photometric Data Set for Cosmology - Sevilla-Noarbe, I., et al. (2021), The Astrophysical Journal Supplement Series, DOI:

10.3847/1538-4365/abeb66

[122] Consistency of cosmic shear analyses in harmonic and real space - Doux, C., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab661

[123] Dark energy survey internal consistency tests of the joint cosmological probes analysis with posterior predictive distributions - Doux, C., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab526

[124] Dark Energy Survey Year 1 Results: Cosmological Constraints from Cluster Abundances, Weak Lensing, and Galaxy Correlations - To, C., et al. (2021), Physical Review Letters, DOI: 10.1103/PhysRevLett.126.141301

[125] No Evidence for Orbital Clustering in the Extreme Trans-Neptunian Objects - Napier, K. J., et al. (2021), The Planetary Science Journal, DOI: 10.3847/PSJ/abe53e

[126] The WaZP galaxy cluster sample of the dark energy survey year 1 - Aguena, M., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab264

[127] Combination of cluster number counts and two-point correlations: validation on mock Dark Energy Survey - To, C.-H., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab239

[128] A machine learning approach to galaxy properties: joint redshift-stellar mass probability distributions with Random Forest - Mucesh, S., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stab164

[129] Identifying RR Lyrae Variable Stars in Six Years of the Dark Energy Survey - Stringer, K. M., et al. (2021), The Astrophysical Journal, DOI: 10.3847/1538-4357/abe873

[130] Constraints on Dark Matter Properties from Observations of Milky Way Satellite Galaxies - Nadler, E. O., et al. (2021), Physical Review Letters, DOI: 10.1103/PhysRevLett.126.091101

[131] CODEX weak lensing mass catalogue and implications on the mass-richness relation - Kiiveri, K., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa3936

[132] The effect of environment on Type Ia supernovae in the Dark Energy Survey three-year cosmological sample - Kelsey, L., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa3924

[133] The Atacama Cosmology Telescope: A Catalog of >4000 Sunyaev-Zel'dovich Galaxy Clusters - Hilton, M., et al. (2021), The Astrophysical Journal Supplement Series, DOI: 10.3847/1538-4365/abd023

[134] Cosmological constraints from DES Y1 cluster abundances and SPT multiwavelength data - Costanzi, M., et al. (2021), Physical Review D, DOI: 10.1103/PhysRevD.103.043522

[135] Dark Energy Survey Year 3 results: Optimizing the lens sample in a combined galaxy clustering and galaxy-galaxy lensing analysis - Porredon, A., et al. (2021), Physical Review D, DOI: 10.1103/PhysRevD.103.043503

[136] Is diffuse intracluster light a good tracer of the galaxy cluster matter distribution? - Sampaio-Santos, H., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa3680

[137] Dark Energy Survey year 3 results: point spread function modelling - Jarvis, M., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa3679

[138] Shadows in the Dark: Low-surface-brightness Galaxies Discovered in the Dark Energy Survey - Tanoglidis, D., et al. (2021), The Astrophysical Journal Supplement Series, DOI:

10.3847/1538-4365/abca89

[139] DES Y1 results: Splitting growth and geometry to test Λ CDM - Muir, J., et al. (2021), Physical Review D, DOI: 10.1103/PhysRevD.103.023528

[140] Machine Learning for Searching the Dark Energy Survey for Trans-Neptunian Objects - Henghes, B., et al. (2021), Publications of the Astronomical Society of the Pacific, DOI: 10.1088/1538-3873/abcaea

[141] Dark Energy Survey Year 1 results: the lensing imprint of cosmic voids on the cosmic microwave background - Vielzeuf, P., et al. (2021), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa3231

[142] Perturbation theory for modeling galaxy bias: Validation with simulations of the Dark Energy Survey - Pandey, S., et al. (2020), Physical Review D, DOI: 10.1103/PhysRevD.102.123522

[143] Candidate periodically variable quasars from the Dark Energy Survey and the Sloan Digital Sky Survey - Chen, Y.-C., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa2957

[144] μ_⋆ masses: weak-lensing calibration of the Dark Energy Survey Year 1 redMaPPer clusters using stellar masses - Pereira, M. E. S., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa2687

[145] STRIDES: Spectroscopic and photometric characterization of the environment and effects of mass along the line of sight to the gravitational lenses DES J0408-5354 and WGD 2038-4008 - Buckley-Geer, E. J., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa2563

[146] A DESGW Search for the Electromagnetic Counterpart to the LIGO/Virgo Gravitational-wave Binary Neutron Star Merger Candidate S190510g - Garcia, A., et al. (2020), The Astrophysical Journal, DOI: 10.3847/1538-4357/abb823

[147] The host galaxies of 106 rapidly evolving transients discovered by the Dark Energy Survey - Wiseman, P., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa2474

[148] Validation of selection function, sample contamination and mass calibration in galaxy cluster samples - Grandis, S., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa2333

[149] Noise from undetected sources in Dark Energy Survey images - Eckert, K., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa2133

[150] Constraints on the Physical Properties of GW190814 through Simulations Based on DECam Follow-up Observations by the Dark Energy Survey - Morgan, R., et al. (2020), The Astrophysical Journal, DOI: 10.3847/1538-4357/abafaa

[151] A Statistical Standard Siren Measurement of the Hubble Constant from the LIGO/Virgo Gravitational Wave Compact Object Merger GW190814 and Dark Energy Survey Galaxies - Palmese, A., et al. (2020), The Astrophysical Journal, DOI: 10.3847/2041-8213/abaeff

[152] The impact of spectroscopic incompleteness in direct calibration of redshift distributions for weak lensing surveys - Hartley, W. G., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa1812

[153] Weak lensing of Type Ia Supernovae from the Dark Energy Survey - Macaulay, E., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa1852

[154] Dark Energy Survey identification of a low-mass active galactic nucleus at redshift 0.823

from optical variability - Guo, H., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa1803

[155] Dark Energy Survey Year 1 Results: Cosmological constraints from cluster abundances and weak lensing - Abbott, T. M. C., et al. (2020), Physical Review D, DOI: 10.1103/PhysRevD.102.023509

[156] DES16C3cje: A low-luminosity, long-lived supernova - Gutiérrez, C. P., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa1452

[157] OzDES multi-object fibre spectroscopy for the Dark Energy Survey: results and second data release - Lidman, C., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa1341

[158] Studying Type II supernovae as cosmological standard candles using the Dark Energy Survey - de Jaeger, T., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa1402

[159] Chemical Analysis of the Ultrafaint Dwarf Galaxy Grus II. Signature of High-mass Stellar Nucleosynthesis - Hansen, T. T., et al. (2020), The Astrophysical Journal, DOI: 10.3847/1538-4357/ab9643

[160] A joint SZ-X-ray-optical analysis of the dynamical state of 288 massive galaxy clusters - Zenteno, A., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa1157

[161] STRIDES: a 3.9 per cent measurement of the Hubble constant from the strong lens system DES J0408-5354 - Shajib, A. J., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa828

[162] Supernova Siblings: Assessing the Consistency of Properties of Type Ia Supernovae that Share the Same Parent Galaxies - Scolnic, D., et al. (2020), The Astrophysical Journal, DOI: 10.3847/2041-8213/ab8735

[163] CODEX clusters. Survey, catalog, and cosmology of the X-ray luminosity function - Finoguenov, A., et al. (2020), Astronomy and Astrophysics, DOI: 10.1051/0004-6361/201937283

[164] Blinding multiprobe cosmological experiments - Muir, J., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa965

[165] First cosmology results using type Ia supernovae from the Dark Energy Survey: the effect of host galaxy properties on supernova luminosity - Smith, M., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa946

[166] Cosmology dependence of galaxy cluster scaling relations - Singh, P., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa1004

[167] The STRong lensing Insights into the Dark Energy Survey (STRIDES) 2017/2018 follow-up campaign: discovery of 10 lensed quasars and 10 quasar pairs - Lemon, C., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa652

[168] Constraining radio mode feedback in galaxy clusters with the cluster radio AGNs properties to z ~ 1 - Gupta, N., et al. (2020), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/staa832

[169] Milky Way Satellite Census. II. Galaxy-Halo Connection Constraints Including the Impact of the Large Magellanic Cloud - Nadler, E. O., et al. (2020), The Astrophysical Journal, DOI: 10.3847/1538-4357/ab846a

[170] Milky Way Satellite Census. I. The Observational Selection Function for Milky Way Satellites in DES Y3 and Pan-STARRS DR1 - Drlica-Wagner, A., et al. (2020), The Astrophysical Journal, DOI: 10.3847/1538-4357/ab7eb9

[171] Detection of Cross-Correlation between Gravitational Lensing and γ Rays - Ammazzalorso, S., et al. (2020), Physical Review Letters, DOI: 10.1103/PhysRevLett.124.101102

[172] The SPTpol Extended Cluster Survey - Bleem, L. E., et al. (2020), The Astrophysical Journal Supplement Series, DOI: 10.3847/1538-4365/ab6993

[173] Mass variance from archival X-ray properties of Dark Energy Survey Year-1 galaxy clusters - Farahi, A., et al. (2019), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stz2689

[174] Detection of CMB-Cluster Lensing using Polarization Data from SPTpol - Raghunathan, S., et al. (2019), Physical Review Letters, DOI: 10.1103/PhysRevLett.123.181301

[175] Dark Energy Survey Year 1 results: validation of weak lensing cluster member contamination estimates from P(z) decomposition - Varga, T. N., et al. (2019), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stz2185

[176] Methods for cluster cosmology and application to the SDSS in preparation for DES Year 1 release - Costanzi, M., et al. (2019), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stz1949

[177] A DECam Search for Explosive Optical Transients Associated with IceCube Neutrino Alerts - Morgan, R., et al. (2019), The Astrophysical Journal, DOI: 10.3847/1538-4357/ab3a45

[178] Dark Energy Surveyed Year 1 results: calibration of cluster mis-centring in the redMaPPer catalogues - Zhang, Y., et al. (2019), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stz1361

[179] Joint halo-mass function for modified gravity and massive neutrinos - I. Simulations and cosmological forecasts - Hagstotz, S., et al. (2019), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stz1051

[180] Dark Energy Survey Year 1 results: weak lensing mass calibration of redMaPPer galaxy clusters - McClintock, T., et al. (2019), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/sty2711

[181] Modelling projection effects in optically selected cluster catalogues - Costanzi, M., et al. (2019), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/sty2665

[182] Cross-correlation of galaxies and galaxy clusters in the Sloan Digital Sky Survey and the importance of non-Poissonian shot noise - Paech, K., et al. (2017), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stx1354

[183] Next generation cosmology: constraints from the Euclid galaxy cluster survey - Sartoris, B., et al. (2016), Monthly Notices of the Royal Astronomical Society, DOI: 10.1093/mnras/stw630

[184] Neutrino constraints: what large-scale structure and CMB data are telling us? - Costanzi, M., et al. (2014), Journal of Cosmology and Astroparticle Physics, DOI: 10.1088/1475-7516/2014/10/081

[185] Cosmology with massive neutrinos III: the halo mass function and an application to galaxy clusters - Costanzi, M., et al. (2013), Journal of Cosmology and Astroparticle Physics, DOI: 10.1088/1475-7516/2013/12/012

[186] Constraining neutrino properties with a Euclid-like galaxy cluster survey - Costanzi Alunno Cerbolini, M., et al. (2013), Journal of Cosmology and Astroparticle Physics, DOI:

10.1088/1475-7516/2013/06/020

- **Conferences, seminars and workshop:**

>50 attended conferences/seminars/workshops; >30 oral presentations:

- 5 as invited speaker to institute seminars
- 7 as invited speaker to conferences and workshops
- 2 as invited lecturer
- 3 times member of the organizing committee

List of attended conferences, seminars and workshops:

1. *Beyond LCDM: from dark matter halos to large scale structures* – 2 - 6 July 2012 at SCfA, Sesto (BZ), Italy.
2. *Detailed Comparison of Cluster Physics from Simulations and X-ray observations* – 18 – 23 November 2012 at Ringberg Castle, Munich, Germany. (**Oral presentation**)
3. *Tracing Cosmic Evolution with Clusters* – 1 - 5 July 2013 at SCfA, Sesto (BZ), Italy. (**Poster presentation**)
4. *Building the Euclid Cluster Survey* – 7 - 11 July 2014 at ScfA, Sesto (BZ), Italy. (**Oral presentation**)
5. *eRosita Collaboration meeting* – 9 - 10 March 2015, Bonn, Germany. (**Oral presentation**)
6. *EUCLID Cluster of Galaxies Since Working Group meeting* – 5 - 7 May 2015, Bologna, Italy.
7. *DES Collaboration meeting* – 11 - 15 May 2015 at University of Michigan, Ann Arbor (MI), U.S.
8. *Theoretical and Observational Progress on LSS* – 20 - 24 July 2015 at ESO, Garching, Germany.
9. *DES Collaboration meeting* – 5 - 9 October 2015 at Ift, Madrid, Spain. (**Oral presentation**)
10. *eRosita Collaboration meeting* – 12 - 13 October 2015, Bamberg, Germany. (**Oral presentation**)
11. *EUCLID Cluster of Galaxies Since Working Group meeting* – 1 - 3 February 2016, Paris, French. (**Oral presentation**)
12. *DES Collaboration meeting* – 09 - 13 May 2016 at SLAC , Stanford (CA), U.S. **(Oral presentation)**
13. *EUCLID Cluster of Galaxies Since Working Group meeting* – 14 - 17 Nov. 2016, Trieste, Italy. **(Oral presentation)**
14. *DES Collaboration meeting* – 12 - 16 December 2016 at University of Cambridge, U.K. (**Oral presentation**)
15. One-percenter workshop – 30 – 31 March 2017 at Center for Computational Astrophysics, New York (NY), U.S. (**Invited participant**)
16. *DES Collaboration meeting* – 12 - 16 June 2017 at U. Chicago, Chicago (IL), U.S. (**Oral presentation**)
17. Dark Universe 2017 – 9 - 13 October 2017 at LMU, Munich, Germany
18. *EUCLID Cluster of Galaxies Since Working Group meeting* – 25 - 27 Oct. 2017, Toulouse, French. (**Oral presentation**)
19. *eRosita Collaboration meeting* – 27 - 28 November 2017, Bonn, Germany.
20. *Cluster at Lighthouse Workshop (hosted by Kavli Institue for Particle Astrophysics and Cosmology, Stanford University)* – 9 - 13 February 2018, Point Montara (CA), U.S. (**Invited participant**)

21. *eRosita Collaboration meeting* – 23 - 26 April 2018 at MPE, Garching, Germany. **(Oral presentation)**
22. *DES Collaboration meeting* – 14 - 18 May 2018 at TAMU, College Station (TX), U.S. **(Oral presentation)**
23. *EUCLID Cluster of Galaxies Since Working Group meeting* – 10 - 12 October 2018, Munich, Germany. (**Member of the organizing committee, Oral presentation**)
24. *Institute seminar at Osservatorio Astronomico di Trieste* – 7 November 2018, Trieste, Italy. (**Invited speaker**)
25. *DES Collaboration meeting* – 3 - 7 December 2018 at Unicamp, Campinas, Brazil. (**Oral presentation**)
26. *American Astronomical Society 223rd meeting* – 6 – 10 January 2019, Seattle, Washington. (**Invited speaker**)
27. *Fermilab Astrophysics Seminar* – 14 January 2019 at Fermi National Accelerator Laboratory, Batavia, Illinois. (**Invited speaker**)
28. *Cosmology on Safari* 2019 – 3 – 9 March 2019, Hluhluwe, KwaZulu-Natal, South Africa. (**Invited speaker**)
29. *DES Collaboration meeting* – 17 – 21 June 2019, University of Pennsylvania , Philadelphia (PA), U.S. (**Oral presentation**)
30. *Tracing Cosmic Evolution with Clusters of Galaxies* – 8 – 12 July 2019, Sesto (BZ), Italy. (**Invited speaker** and **member of the local organizing committee**)
31. *Matera Oscura* – 2 – 6 September 2019, University of Matera , Matera, Italy (**Oral presentation**)
32. *LIneA webinar* – 24 October 2019, (webinar) Laboratorio Interinstitucional de e-Astronomia, Brazil. (**Invited speaker**)
33. *DES Collaboration meeting* – 4 – 8 November 2019, University of Sussex, Brighton, U.K. (**Oral presentation**)
34. *Euclid Collaboration meeting* – 3 - 6 February 2020 at AIP, Paris, France (**Oral presentation**)
35. *German Center for Cosmological Lensing Seminar* – 17 April 2020, remote meeting (**Invited speaker**)
36. *DES Collaboration meeting* – 18 - 22 May 2020 remote meeting (**Oral presentation**)
37. *Advanced Euclid School Les Houches* – 15 – 26 June 2020, remote meeting. (**Invited lecturer**)
38. *Dissecting Cluster Cosmology, Stage 0* – 1 September 2020, remote meeting. (**Organizer**)
39. *SPT face2face meeting 2020* – 29 – 30 September 2020, remote meeting. (**Oral presentation**)
40. *IV Meeting Nazionale Collaborazione Euclid* – 15 – 17 February 2021, remote meeting.
41. *Euclid Cluster SWG Meeting* – 22 – 24 February 2021, remote meeting. (**Oral presentation**)
42. *DES Collaboration meeting* – 17 - 20 May 2021 remote meeting (**Oral presentation**)
43. *Grow of Structures Summer Seminars* – 09 June 2021, remote meeting (**Invited speaker**)
44. IAP colloquium: "Debating the potential of machine learning in astronomical surveys" – 18 - 22 October 2021
45. MIAPP workshop: The Accelerating Universe 2.0 – 15 - 26 November 2021, MIAPP, Munich (**Invited speaker**)
46. *IASF-MI seminars* – 16 March 2022, remote meeting (**Invited speaker**)
47. Workshop Intriguing Inconsistencies in the Growth of Structure Over Cosmic Time – 25 - 29 July 2022, Sexten Center for Astrophysics, Sesto (BZ) (**Invited speaker**)
48. CLUSTER3: A view from Italy on galaxy clusters and groups in the 21st century – 20 - 23 September 2022, University of Bologna, Bologna (IT) (**Oral presentation**)

49. Confini e Interfacce: progetto “Orientamento e tutorato" per docenti di scuole secondarie, primo e secondo grado (DM 752/2021) – 26 - 28 September, University of Trieste, Trieste (IT) (**Lecturer**)
50. AstroParticle Symposium: Cosmology Week – 07 - 10 November 2022, Pascal Institute of the Paris-Saclay University, Paris (FR) (**Oral presentation**)
51. *DES Collaboration meeting* – 16 - 20 Jan 2023, Portsmouth University, Portsmouth (UK) (**Oral presentation**)
52. *Euclid Cluster SWG Meeting* – 14 - 16 Mar 2023, Accademia delle Scienze, Bologna (IT) (**Oral presentation**)
53. *Dissecting Cluster Cosmology: Toward a roadmap for forthcoming cluster surveys* – 03 - 07 Jul 2023, IFPU, Trieste (IT) (**Organizer**)
54. Galaxy Cluster Workshop – 28 Aug - 10 Sept, Aspen Center for Physics, Aspen, CO, USA
55. CLUSTER4: A view from Italy on galaxy clusters and groups in the 21st century – 10 - 13 September 2024, University of Trieste, Trieste (IT)
56. *First Results from the SRG/eROSITA All-Sky Survey: From Stars to Cosmology* – 16 - 20 September 2024, TUM, Garching, Germany (**Invited speaker**)

Short-term visits to University of Arizona (Tucson, AZ - March 2017) and Fermi National Accelerator Laboratory (Batavia, IL - January 2019) for the development of the project “Dark Energy Survey Cluster Cosmology”

Trieste, 20/09/24