

UNIVERSITÀ DEGLI STUDI DI MILANO

selezione pubblica per n.1 posto di Ricercatore a tempo determinato in tenure track (RTT)

per il settore concorsuale **02/C1 - Astronomia, Astrofisica, Fisica della Terra e dei Pianeti**,

settore scientifico-disciplinare **FIS/05 - Astronomia e Astrofisica (ora gruppo scientifico-disciplinare 02/PHYS-05 - Astrofisica e cosmologia, fisica dello spazio, della terra e del clima; settore scientifico-disciplinare PHYS- 05/A - Astrofisica, cosmologia e scienza dello spazio)**

presso il Dipartimento di **FISICA "ALDO PONTREMOLI"**,

(avviso bando pubblicato sulla G.U. n. **49** del **18/06/2024**) Codice concorso **5579**

PERSONAL INFORMATION **Pietro Bergamini**

EDUCATION AND TRAINING

01/11/2021 - Current
Milan, Italy

Postdoc – Università degli Studi di Milano

EQF level 8

Research project title: (Astrophysics) Detailed study of the dark matter distribution in galaxy clusters' cores with a new generation of high-precision strong lensing models

01/11/2019 - 31/10/2021
Bologna, Italy

Postdoc – Osservatorio di Astrofisica e Scienza dello Spazio di Bologna (OAS, INAF)

EQF level 8

Research project title: Development of analysis and simulation techniques for strong gravitational lensing in the context of the Euclid space mission.

01/10/2016 – 17/12/2019
Padova, Italy

Ph.D. in Astronomy - Università degli Studi di Padova

EQF level 8

Thesis title: New insights on the inner mass distribution of massive galaxy clusters from a combination of strong lensing and galaxy kinematics.

Thesis supervisor: Prof. Piero Rosati

Thesis co-supervisors: Dr. A. Mercurio, Dr. G. Rodighiero, Prof. A. Franceschini.

2013 - 2016
Ferrara, Italy

Master's degree in Physics - Department of Physics and Earth Science - Università degli Studi di Ferrara

EQF level 7

Thesis title: Internal structure, dark matter and baryonic content of clusters of galaxies by kinematic and lensing data.

Thesis supervisor: Prof. Piero Rosati

Final mark: 110/110 cum laude

2008 - 2013
Ferrara, Italy

Bachelor's degree in Physics and Astrophysics - Department of Physics and Earth Science - Università degli Studi di Ferrara

EQF level 6

Thesis title: Studio e realizzazione della cavità Fabry Perot per l'esperimento PVLAS

Thesis supervisor: Prof. Guido Zavattini

Final mark: 110/110 cum laude

2003 - 2008
Bondeno, Ferrara, Italy

Liceo Scientifico (Italian secondary school diploma) – Liceo scientifico di Bondeno

Final mark: 100/100 (Awarded with the F. Viviani prize conferred to students graduated with the maximum mark)

PERSONAL SKILLS

Mother tongue Italian

Other languages

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
C1	C1	C1	C1	C1

Levels: A1 and A2: Basic user – B1 and B2: Independent user – C1 and C2: Proficient user
[Common European Framework of Reference for Languages](#)

Digital competences

SELF-ASSESSMENT				
Information Processing	Communication	Content creation	Safety	Problem solving
Proficient user	Independent user	Independent user	Independent user	Proficient user

[Digital competences - Self-assessment grid](#)

Certificates European Computer Driving Licence ECDL

Main programming languages

- Advanced skills in Python and Julia programming languages and in the LaTeX markup language.
- Knowledge of the C, C++, and BASH programming languages.
- Advanced skills in programming microcontrollers and single-board computers (e.g., Arduino and Raspberry-Pi).

Astronomical software

- Expert user of tools for developing and accessing the results of strong gravitational lensing models (e.g., LensTool, Gravity.jl, pylenslib).
- Expert user of many tools for visualizing and manipulating astronomical data, including photometric images, spectroscopic data and datacubes, and catalogs (e.g., SAOImageDS9, Aladin Sky Atlas, QFitsView, GALFIT, PandoraEZ, SExtractor, TopCat).

Other software

- Expert user of tools to edit LaTeX documents (e.g., Overleaf).
- Expert user of tools to edit text documents on Windows, MAC, and Linux operative systems (e.g., Microsoft Office and Open Office).
- Basic knowledge of Adobe Lightroom and Photoshop.
- Basic knowledge of several tools for the acquisition of amateur astronomical images (e.g., MaxIm DL).
- Expert user of several digital planetarium software used for the popularization of science.

Main developed software widely used by the scientific community:

- **SLOT (Strong Lensing Online Tool)**: Online tool to access all the results and exploit the predictive power of the gravitational lens models (<https://www.fe.infn.it/astro/lensing/>).
- **HST2EUCLID**: Software to create Euclid simulated images in different photometric bands starting from real Hubble observations.
- **GravityFM**: Software to derive the intrinsic physical properties of gravitationally lensed sources by exploiting the forward modeling technique.
- **BayesLens**: A wrapper for the LensTool software that allows a realistic description of the cluster member galaxies in strong gravitational lensing models.

PUBLICATIONS

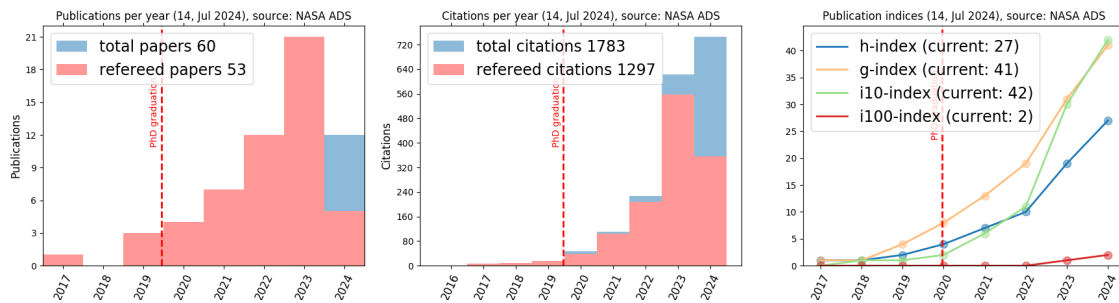
Bibliometric indicators
Data from SAO/NASA ADS
(last update 07/2024)

Academic Age (years of activity after the first refereed publication): 7.1

Total number of refereed publications: 60 (7 as first author)

Total number of citations: 1783

H-index: 27



2024 Title: Euclid preparation. Forecasting the recovery of galaxy physical properties and their relations with template-fitting and machine-learning methods

Authors: Euclid Collaboration; Enia, A.; Bolzonella, M.; Pozzetti, L.; Humphrey, A.; Cunha, P. A. C.; Hartley, W. G.; Dubath, F.; Paltani, S.; Lopez Lopez, X.; Quai, S.; Bardelli, S.; Bisigello, L.; Cavioti, S.; De Lucia, G.; Ginolfi, M.; Grazian, A.; Siudek, M.; Tortora, C.; Zamorani, G.; Aghanim, N.; Altieri, B.; Amara, A.; Andreon ; ...

Journal: Submitted to Astronomy & Astrophysics - arXiv:2407.07940

doi: 10.48550/arXiv.2407.07940

2024 Title: Euclid. I. Overview of the Euclid mission

Authors: Euclid Collaboration; Mellier, Y.; Abdurro'uf; Acevedo Barroso, J. A.; Achúcarro, A.; Adamek, J.; Adam, R.; Addison, G. E.; Aghanim, N.; Aguena, M.; Ajani, V.; Akrami, Y.; Al-Bahlawan, A.; Alavi, A.; Albuquerque, I. S.; Alestas, G.; Alguero, G.; Allaoui, A.; Allen, S. W.; Allevalo, V.; Alonso-Tetilla, A. V.; Altieri, B ; ...

Journal: Paper submitted as part of the Astronomy & Astrophysics special issue 'Euclid on Sky', which contains Euclid key reference papers and first results from the Euclid Early Release Observations - arXiv:2405.13491

doi: 10.48550/arXiv.2405.13491

- 2024** **Title:** Euclid: Early Release Observations – A preview of the Euclid era through a galaxy cluster magnifying lens
Authors: A Atek, H.; Gavazzi, R.; Weaver, J. R.; Diego, J. M.; Schrabback, T.; Hatch, N. A.; Aghanim, N.; Dole, H.; Hartley, W. G.; Taamoli, S.; Congedo, G.; Jimenez-Teja, Y.; Cuillandre, J. -C.; Bañados, E.; Belladitta, S.; Bowler, R. A. A.; Franco, M.; Jauzac, M.; Mahler, G.; Richard, J.; Rocci, P. -F.; Serjeant, S.; Toft, S.; Abriola, D.; **Bergamini, P** ; ...
Journal: Paper submitted as part of the Astronomy & Astrophysics special issue 'Euclid on Sky', which contains Euclid key reference papers and first results from the Euclid Early Release Observations - arXiv:2405.13504
doi: 10.48550/arXiv.2405.13504
- 2024** **Title:** Improved model of the Supernova Refsdal cluster MACS J1149.5+2223 thanks to VLT/MUSE
Authors: Schuldt, S.; Grillo, C.; Caminha, G. B.; Mercurio, A.; Rosati, P.; Morishita, T.; Stiavelli, M.; Suyu, S. H.; **Bergamini, P**; Brescia, M.; Calura, F.; Meneghetti, M.
Journal: Paper accepted for publication in Astronomy & Astrophysics - arXiv:2405.12287
doi: 10.48550/arXiv.2405.12287
- 2024** **Title:** Augmenting the power of time-delay cosmography in lens galaxy clusters by probing their member galaxies. II. Cosmic chronometers
Authors: **Bergamini, P**; Schuldt, S.; Acebron, A.; Grillo, C.; Meštrić, U.; Granata, G.; Caminha, G. B.; Meneghetti, M.; Mercurio, A.; Rosati, P.; Suyu, S. H.; Vanzella, E.
Journal: Astronomy & Astrophysics, Volume 682, id.L2, 6 pp. - arXiv:2401.04767
doi: 10.1051/0004-6361/202348267
- 2024** **Title:** Between the Extremes: A JWST Spectroscopic Benchmark for High Redshift Galaxies Using ~500 Confirmed Sources at $z \geq 5$
Authors: Roberts-Borsani, G.; Treu, T.; Shapley, A.; Fontana, A.; Pentericci, L.; Castellano, M.; Morishita, T.; **Bergamini, P**; Rosati, P.
Journal: Submitted to The Astrophysical Journal - arXiv:2403.07103
doi: 10.48550/arXiv.2403.07103
- 2024** **Title:** JWST NIRSpec Spectroscopy of the Remarkable Bright Galaxy GHZ2/GLASS-z12 at Redshift 12.34
Authors: Castellano, M.; Napolitano, L.; Fontana, A.; Roberts-Borsani, G.; Treu, T.; Vanzella, E.; Zavala, J. A.; Arrabal Haro, P.; Calabrò, A.; Llerena, M.; Mascia, S.; Merlin, E.; Paris, D.; Pentericci, L.; Santini, P.; Bakx, T. J. L. C.; **Bergamini, P**; Cupani, G.; Dickinson, M.; Filippenko, A. V.; Glazebrook, K.; Grillo, C.; Kelly, P. L.; Malkan, M. A.; Mason, C. A.; Morishita, T.; Nanayakkara, T.; Rosati, P.; Sani, E.; Wang, X.; Yoon, I.
Journal: Accepted for publication in The Astrophysical Journal - arXiv:2403.10238
doi: 10.48550/arXiv.2403.10238
- 2024** **Title:** Euclid Preparation XXXIII. Characterization of convolutional neural networks for the identification of galaxy-galaxy strong lensing events
Authors: Euclid Collaboration ; Leuzzi, L. ; Meneghetti, M. ; Angora, G. ; Metcalf, R. B. ; Moscardini, L. ; Rosati, P. ; **Bergamini, P** ; Calura, F. ; Clément, B. ; Gavazzi, R. ; Gentile, F. ; Lochner, M. ; Grillo, C. ; Vernardos, G. ; Aghanim, N. ; Amara, A. ; Amendola, L. ; Andreon, S. ; Auricchio, N. ; Bardelli, S. ; Bodendorf, C. ; ...
Journal: Astronomy & Astrophysics, Volume 681, id.A68, 23 pp. - arXiv:2307.08736
doi: 10.1051/0004-6361/202347244

- 2024** **Title:** Enhanced Subkiloparsec-scale Star Formation: Results from a JWST Size Analysis of 341 Galaxies at $5 < z < 14$
Authors: Morishita, T. ; Stiavelli, M. ; Chary, R. ; Trenti, M. ; [Bergamini, P.](#) ; Chiaberge, M. ; Leethochawalit, N. ; Roberts-Borsani, G. ; Shen, X. ; Treu, T.
Journal: The Astrophysical Journal, Volume 963, Issue 1, id.9, 21 pp. - arXiv:2308.05018
doi: 10.3847/1538-4357/ad1404
- 2024** **Title:** An improved Magellan weak lensing analysis of the galaxy cluster Abell 2744
Authors: Abriola, D.; Della Pergola, D.; Lombardi, M.; [Bergamini, P.](#); Nonino, M.; Grillo, C.; Rosati, P.
Journal: Astronomy and Astrophysics, 684, A193 - arXiv:2402.08364
doi: 10.1051/0004-6361/202347887
- 2024** **Title:** Diverse Oxygen Abundance in Early Galaxies Unveiled by Auroral Line Analysis with JWST
Authors: Morishita, T.; Stiavelli, M.; Grillo, C.; Rosati, P.; Schuldt, S.; Trenti, M.; [Bergamini, P.](#); Boyett, K. N.; Chary, R.; Leethochawalit, N.; Roberts-Borsani, G.; Treu, T.; Vanzella, E.
Journal: Submitted to The Astrophysical Journal - arXiv:2402.14084
doi: 10.48550/arXiv.2402.14084
- 2024** **Title:** The powerful lens galaxy cluster PLCK G287.0+32.9 ($\theta_E \sim 43''$)
Authors: D'Addona, M.; Mercurio, A.; Rosati, P.; Grillo, C.; Caminha, G. B.; Acebron, A.; Angora, G.; [Bergamini, P.](#); Bozza, V.; Granata, G.; Annunziatella, M.; Gargiulo, A.; Gobat, R.; Tozzi, P.; Girardi, M.; Lombardi, M.; Meneghetti, M.; Schipani, P.; Tortorelli, L.; Vanzella, E.
Journal: Astronomy and Astrophysics, 686, A4 - arXiv:2401.16473
doi: 10.1051/0004-6361/202349060
- 2023** **Title:** UV-continuum β slopes of individual $z \sim 2$ -6 clumps and their evolution
Authors: Bolamperti, A.; Zanella, A.; Meštrić, U.; Vanzella, E.; Castellano, M.; [Bergamini, P.](#); Calura, F.; Grillo, C.; Meneghetti, M.; Mercurio, A.; Rosati, P.; Devereaux, T.; Iani, E.; Vernet, J.
Journal: Monthly Notices of the Royal Astronomical Society, Volume 526, Issue 4, pp.5263-5277 - arXiv:2310.04498
doi: 10.1093/mnras/stad3114
- 2023** **Title:** Augmenting the power of time-delay cosmography in lens galaxy clusters by probing their member galaxies. I. Type Ia supernovae
Authors: Acebron, A.; Schuldt, S.; Grillo, C.; [Bergamini, P.](#); Granata, G.; Meštrić, U.; Caminha, G. B.; Meneghetti, M.; Mercurio, A.; Rosati, P.; Suyu, S. H.; Vanzella, E.
Journal: Astronomy & Astrophysics, Volume 680, id.L9, 6 pp. - arXiv:2311.03440
doi: 10.1051/0004-6361/202348090

- 2023** **Title:** Exploring the low-mass regime of galaxy-scale strong lensing: Insights into the mass structure of cluster galaxies
Authors: Granata, G.; [Bergamini, P.](#); Grillo, C.; Meneghetti, M.; Mercurio, A.; Meštrić, U.; Ragagnin, A.; Rosati, P.; Caminha, G. B.; Tortorelli, L.; Vanzella, E.
Journal: Astronomy & Astrophysics, Volume 679, id.A124, 15 pp. - arXiv:2310.02310
doi: 10.1051/0004-6361/202347521
- 2023** **Title:** A MUSE view of the massive merging galaxy cluster ACT-CL J0102-4915 (El Gordo) at $z = 0.87$. Robust strong lensing model and data release
Authors: Caminha, G. B.; Grillo, C.; Rosati, P.; Liu, A.; Acebron, A.; [Bergamini, P.](#); Caputi, K. I.; Mercurio, A.; Tozzi, P.; Vanzella, E.; Demarco, R.; Frye, B.; Rosani, G.; Sharon, K.
Journal: Astronomy & Astrophysics, Volume 678, id.A3, 17 pp. - arXiv:2209.02718
doi: 10.1051/0004-6361/202244897
- 2023** **Title:** A persistent excess of galaxy-galaxy strong lensing observed in galaxy clusters
Authors: Meneghetti, M.; Cui, W.; Rasia, E.; Yepes, G.; Acebron, A.; Angora, G.; [Bergamini, P.](#); Borgani, S.; Calura, F.; Despali, G.; Giocoli, C.; Granata, G.; Grillo, C.; Knebe, A.; Macciò, A. V.; Mercurio, A.; Moscardini, L.; Natarajan, P.; Ragagnin, A.; Rosati, P.; Vanzella, E.
Journal: Astronomy & Astrophysics, Volume 678, id.L2, 6 pp. - arXiv:2309.05799
doi: 10.1051/0004-6361/202346975
- 2023** **Title:** Near-infrared characterization of ultra-diffuse galaxies in Abell 2744 by JWST/NIRISS imaging
Authors: Ikeda, R.; Morishita, T.; Tsukui, T.; Vulcani, B.; Trenti, M.; Metha, B.; Acebron, A.; [Bergamini, P.](#); Grillo, C.; Iono, D.; Mercurio, A.; Rosati, P.; Vanzella, E.
Journal: Monthly Notices of the Royal Astronomical Society, Volume 523, Issue 4, pp.6310-6319 - arXiv:2212.11298
doi: 10.1093/mnras/stad1692
- 2023** **Title:** Searching for strong galaxy-scale lenses in galaxy clusters with deep networks. I. Methodology and network performance
Authors: Angora, G.; Rosati, P.; Meneghetti, M.; Brescia, M.; Mercurio, A.; Grillo, C.; [Bergamini, P.](#); Acebron, A.; Caminha, G.; Nonino, M.; Tortorelli, L.; Bazzanini, L.; Vanzella, E.
Journal: Astronomy & Astrophysics, Volume 676, id.A40, 17 pp. - arXiv:2303.00769
doi: 10.1051/0004-6361/202346283
- 2023** **Title:** The GLASS-JWST Early Release Science Program. III. Strong-lensing Model of Abell 2744 and Its Infalling Regions
Authors: [Bergamini, P.](#); Acebron, A.; Grillo, C.; Rosati, P.; Caminha, G. B.; Mercurio, A.; Vanzella, E.; Mason, C.; Treu, T.; Angora, G.; Brammer, G. B.; Meneghetti, M.; Nonino, M.; Boyett, K.; Bradač, M.; Castellano, M.; Fontana, A.; Morishita, T.; Paris, D.; Prieto-Lyon, G.; Roberts-Borsani, G.; Roy, N.; Santini, P.; Vulcani, B.; Wang, X.; Yang, L.
Journal: The Astrophysical Journal, Volume 952, Issue 1, id.84, 15 pp. - arXiv:2303.10210
doi: 10.3847/1538-4357/acd643

- 2023** **Title:** Early Results from GLASS-JWST. XXI. Rapid Assembly of a Galaxy at $z = 6.23$ Revealed by Its C/O Abundance
Authors: Jones, T. ; Sanders, R. ; Chen, Y. ; Wang, X. ; Morishita, T. ; Roberts-Borsani, G. ; Treu, T. ; Dressler, A. ; Merlin, E. ; Paris, D. ; Santini, P. ; [Bergamini, P.](#) ; Henry, A. ; Huntzinger, E. ; Nanayakkara, T. ; Boyett, K. ; Bradac, M. ; Brammer, G. ; Calabr , A. ; Glazebrook, K. ; Grasha, K. ; Mascia, S. ; Pentericci, L. ; Trenti, M. ; Vulcani, B.
Journal: The Astrophysical Journal Letters, Volume 951, Issue 1, id.L17, 11 pp. - arXiv:2301.07126
doi: 10.3847/2041-8213/acd938
- 2023** **Title:** An extremely metal poor star complex in the reionization era: Approaching Population III stars with JWST
Authors: Vanzella, E.; Loiacono, F.; [Bergamini, P.](#); Me tr  , U.; Castellano, M.; Rosati, P.; Meneghetti, M.; Grillo, C.; Calura, F.; Mignoli, M.; Brada , M.; Adamo, A.; Rihtar  , G.; Dickinson, M.; Gronke, M.; Zanella, A.; Annibali, F.; Willott, C.; Messa, M.; Sani, E.; Acebron, A.; Bolamperti, A.; Comastri, A.; Gilli, R.; Caputi, K. I.; Ricotti, M.; Gruppioni, C.; Ravindranath, S.; Mercurio, A.; Strait, V.; Martis, N.; Pascale, R.; Caminha, G. B.; Annunziatella, M.; Nonino, M.
Journal: Astronomy & Astrophysics, Volume 678, id.A173, 15 pp. - arXiv:2305.14413
doi: 10.1051/0004-6361/202346981
- 2023** **Title:** Early Results from GLASS-JWST. XX. Unveiling a Population of "Red Excess" Galaxies in Abell2744 and in the Coeval Field
Authors: Vulcani, B. ; Treu, T. ; Calabr , A. ; Fritz, J. ; Poggianti, B. M. ; [Bergamini, P.](#) ; Bonchi, A. ; Boyett, K. ; Caminha, G. B. ; Castellano, M. ; Dressler, A. ; Fontana, A. ; Glazebrook, K. ; Grillo, C. ; Malkan, M. A. ; Mascia, S. ; Mercurio, A. ; Merlin, E. ; Metha, B. ; Morishita, T. ; Nanayakkara, T. ; Paris, D. ; Roberts-Borsani, G. ; Rosati, P. ; Roy, N. ; Santini, P. ; Trenti, M. ; Vanzella, E. ; Wang, X.
Journal: The Astrophysical Journal Letters, Volume 948, Issue 2, id.L15, 18 pp. - arXiv:2303.01115
doi: 10.3847/2041-8213/accbc4
- 2023** **Title:** Early Results from GLASS-JWST. XIX. A High Density of Bright Galaxies at $z \sim 10$ in the A2744 Region
Authors: Castellano, M. ; Fontana, A. ; Treu, T. ; Merlin, E. ; Santini, P. ; [Bergamini, P.](#) ; Grillo, C. ; Rosati, P. ; Acebron, A. ; Leethochawalit, N. ; Paris, D. ; Bonchi, A. ; Belfiori, D. ; Calabr , A. ; Correnti, M. ; Nonino, M. ; Polenta, G. ; Trenti, M. ; Boyett, K. ; Brammer, G. ; Broadhurst, T. ; Caminha, G. B. ; Chen, W. ; Filippenko, A. V. ; Fortuni, F. ; Glazebrook, K. ; Mascia, S. ; Mason, C. A. ; Menci, N. ; Meneghetti, M. ; Mercurio, A. ; Metha, B. ; Morishita, T. ; Nanayakkara, T. ; Pentericci, L. ; Roberts-Borsani, G. ; Roy, N. ; Vanzella, E. ; Vulcani, B. ; Yang, L. ; Wang, X.
Journal: The Astrophysical Journal Letters, Volume 948, Issue 2, id.L14, 11 pp. - arXiv:2212.06666
doi: 10.3847/2041-8213/accea5
- 2023** **Title:** Clues on the presence and segregation of very massive stars in the Sunburst Lyman-continuum cluster at $z = 2.37$
Authors: Me tr  , U. ; Vanzella, E. ; Upadhyaya, A. ; Martins, F. ; Marques-Chaves, R. ; Schaerer, D. ; Guibert, J. ; Zanella, A. ; Grillo, C. ; Rosati, P. ; Calura, F. ; Caminha, G. B. ; Bolamperti, A. ; Meneghetti, M. ; [Bergamini, P.](#) ; Mercurio, A. ; Nonino, M. ; Pascale, R.
Journal: Astronomy & Astrophysics, Volume 673, id.A50, 9 pp. - arXiv:2301.04672
doi: 10.1051/0004-6361/202345895

- 2023** **Title:** Closing in on the sources of cosmic reionization: First results from the GLASS-JWST program
Authors: Mascia, S. ; Pentericci, L. ; Calabrò, A. ; Treu, T. ; Santini, P. ; Yang, L. ; Napolitano, L. ; Roberts-Borsani, G. ; **Bergamini, P.** ; Grillo, C. ; Rosati, P. ; Vulcani, B. ; Castellano, M. ; Boyett, K. ; Fontana, A. ; Glazebrook, K. ; Henry, A. ; Mason, C. ; Merlin, E. ; Morishita, T. ; Nanayakkara, T. ; Paris, D. ; Roy, N. ; Williams, H. ; Wang, X. ; Brammer, G. ; Bradač, M. ; Chen, W. ; Kelly, P. L. ; Koekemoer, A. M. ; Trenti, M. ; Windhorst, R. A.
Journal: Astronomy & Astrophysics, Volume 672, id.A155, 11 pp. - arXiv:2301.02816
doi: 10.1051/0004-6361/202345866
- 2023** **Title:** The Kormendy relation of early-type galaxies as a function of wavelength in Abell S1063, MACS J0416.1-2403, and MACS J1149.5+2223
Authors: Tortorelli, L. ; Mercurio, A. ; Granata, G. ; Rosati, P. ; Grillo, C. ; Nonino, M. ; Acebron, A. ; Angora, G. ; **Bergamini, P.** ; Caminha, G. B. ; Meštrić, U. ; Vanzella, E.
Journal: Astronomy & Astrophysics, Volume 671, id.L9, 6 pp. - arXiv:2302.07896
doi: 10.1051/0004-6361/202346151
- 2023** **Title:** New high-precision strong lensing modeling of Abell 2744. Preparing for JWST observations
Authors: **Bergamini, P.** ; Acebron, A. ; Grillo, C. ; Rosati, P. ; Caminha, G. B. ; Mercurio, A. ; Vanzella, E. ; Angora, G. ; Brammer, G. ; Meneghetti, M. ; Nonino, M.
Journal: Astronomy & Astrophysics, Volume 670, id.A60, 15 pp. - arXiv:2207.09416
doi: 10.1051/0004-6361/202244575
- 2023** **Title:** A state-of-the-art strong lensing model of MACS J0416.1-2403 with the largest sample of spectroscopic multiple images
Authors: **Bergamini, P.** ; Grillo, C. ; Rosati, P. ; Vanzella, E. ; Mestric, U. ; Mercurio, A. ; Acebron, A. ; Caminha, G. B. ; Granata, G. ; Meneghetti, M. ; Angora, G. ; Nonino, M.
Journal: Astronomy & Astrophysics, Volume 674, id.A79, 14 pp. - arXiv:2208.14020
doi: 10.1051/0004-6361/202244834
- 2023** **Title:** Early results from GLASS-JWST. IX: First spectroscopic confirmation of low-mass quiescent galaxies at $z > 2$ with NIRISS
Authors: Marchesini, D. ; Brammer, G. ; Morishita, T. ; **Bergamini, P.** ; Wang, X. ; Bradac, M. ; Roberts-Borsani, G. ; Strait, V. ; Treu, T. ; Fontana, A. ; Jones, T. ; Santini, P. ; Vulcani, B. ; Acebron, A. ; Calabrò, A. ; Castellano, M. ; Glazebrook, K. ; Grillo, C. ; Mercurio, A. ; Nanayakkara, T. ; Rosati, P. ; Tubthong, C. ; Vanzella, E.
Journal: The Astrophysical Journal Letters, Volume 942, Issue 2, id.L25, 7 pp. - arXiv:2207.13625
doi: 10.3847/2041-8213/acaac
- 2023** **Title:** The production of ionizing photons in UV-faint $z \sim 3$ -7 galaxies
Authors: Prieto-Lyon, G. ; Strait, V. ; Mason, C. A. ; Brammer, G. ; Caminha, G. B. ; Mercurio, A. ; Acebron, A. ; **Bergamini, P.** ; Grillo, C. ; Rosati, P. ; Vanzella, E. ; Castellano, M. ; Merlin, E. ; Paris, D. ; Boyett, K. ; Calabrò, A. ; Morishita, T. ; Mascia, S. ; Pentericci, L. ; Roberts-Borsani, G. ; Roy, N. ; Treu, T. ; Vulcani, B.
Journal: Astronomy & Astrophysics, Volume 672, id.A186, 10 pp. - arXiv:2211.12548
doi: 10.1051/0004-6361/202245532

- 2023** **Title:** Early Results from GLASS-JWST. XIV. A Spectroscopically Confirmed Protocluster 650 Million Years after the Big Bang
Authors: Morishita, T. ; Roberts-Borsani, G. ; Treu, T. ; Brammer, G. ; Mason, C. A. ; Trenti, M. ; Vulcani, B. ; Wang, X. ; Acebron, A. ; Bahé, Y. ; **Bergamini, P.** ; Boyett, K. ; Bradac, M. ; Calabrò, A. ; Castellano, M. ; Chen, W. ; De Lucia, G. ; Filippenko, A. V. ; Fontana, A. ; Glazebrook, K. ; Grillo, C. ; Henry, A. ; Jones, T. ; Kelly, P. L. ; Koekemoer, A. M. ; Leethochawalit, N. ; Lu, T. ; Marchesini, D. ; Mascia, S. ; Mercurio, A. ; Merlin, E. ; Metha, B. ; Nanayakkara, T. ; Nonino, M. ; Paris, D. ; Pentericci, L. ; Santini, P. ; Strait, V. ; Vanzella, E. ; Windhorst, R. A. ; Rosati, P. ; Xie, L.
Journal: The Astrophysical Journal Letters, Volume 947, Issue 2, id.L24, 11 pp. - arXiv:2211.09097
doi: 10.3847/2041-8213/acb99e
- 2023** **Title:** The nature of an ultra-faint galaxy in the cosmic dark ages seen with JWST
Authors: Roberts-Borsani, G. ; Treu, T. ; Chen, W. ; Morishita, T. ; Vanzella, E. ; Zitrin, A. ; **Bergamini, P.** ; Castellano, M. ; Fontana, A. ; Grillo, C. ; Kelly, P. L. ; Merlin, E. ; Paris, D. ; Rosati, P. ; Acebron, A. ; Bonchi, A. ; Boyett, K. ; Bradac, M. ; Broadhurst, T. ; Calabrò, A. ; Diego, J. M. ; Dressler, A. ; Furtak, L. J. ; Filippenko, A. V. ; Glazebrook, K. ; Koekemoer, A. M. ; Leethochawalit, N. ; Malkan, M. A. ; Mason, C. ; Mercurio, A. ; Metha, B. ; Nanayakkara, T. ; Pentericci, L. ; Pierel, J. ; Rieck, S. ; Roy, N. ; Santini, P. ; Strait, V. ; Strausbaugh, R. ; Trenti, M. ; Vulcani, B. ; Wang, L. ; Wang, X. ; Windhorst, R.
Journal: Nature, Volume 618, Issue 7965, p.480-483 - arXiv:2210.15639
doi: 10.1038/s41586-023-05994-w
- 2022** **Title:** Early Results from GLASS-JWST. VII. Evidence for Lensed, Gravitationally Bound Protoglobular Clusters at $z = 4$ in the Hubble Frontier Field A2744
Authors: Vanzella, E. ; Castellano, M. ; **Bergamini, P.** ; Treu, T. ; Mercurio, A. ; Scarlata, C. ; Rosati, P. ; Grillo, C. ; Acebron, A. ; Caminha, G. B. ; Nonino, M. ; Nanayakkara, T. ; Roberts-Borsani, G. ; Bradac, M. ; Wang, X. ; Brammer, G. ; Strait, V. ; Vulcani, B. ; Meštrić, U. ; Meneghetti, M. ; Calura, F. ; Henry, A. ; Zanello, A. ; Trenti, M. ; Boyett, K. ; Morishita, T. ; Calabrò, A. ; Glazebrook, K. ; Marchesini, D. ; Birrer, S. ; Yang, L. ; Jones, T.
Journal: The Astrophysical Journal Letters, Volume 940, Issue 2, id.L53, 8 pp. - arXiv:2208.00520
doi: 10.3847/2041-8213/ac8c2d
- 2022** **Title:** New strong lensing modelling of SDSS J2222+2745 enhanced with VLT/MUSE spectroscopy
Authors: Acebron, A. ; Grillo, C. ; **Bergamini, P.** ; Caminha, G. B. ; Tozzi, P. ; Mercurio, A. ; Rosati, P. ; Brammer, G. ; Meneghetti, M. ; Nonino, M. ; Vanzella, E.
Journal: Astronomy & Astrophysics, Volume 668, id.A142, 14 pp. - arXiv:2208.13788
doi: 10.1051/0004-6361/202244836
- 2022** **Title:** Early Results from GLASS-JWST. VI. Extreme Rest-optical Equivalent Widths Detected in NIRISS Wide Field Slitless Spectroscopy
Authors: Boyett, K. ; Mascia, S. ; Pentericci, L. ; Leethochawalit, N. ; Trenti, M. ; Brammer, G. ; Roberts-Borsani, G. ; Strait, V. ; Treu, T. ; Bradac, M. ; Glazebrook, K. ; Acebron, A. ; **Bergamini, P.** ; Calabrò, A. ; Castellano, M. ; Fontana, A. ; Grillo, C. ; Henry, A. ; Jones, T. ; Marchesini, D. ; Mason, C. ; Mercurio, A. ; Morishita, T. ; Nanayakkara, T. ; Rosati, P. ; Scarlata, C. ; Vanzella, E. ; Vulcani, B. ; Wang, X. ; Willott, C.
Journal: The Astrophysical Journal Letters, Volume 940, Issue 2, id.L52, 8 pp. - arXiv:2207.13459
doi: 10.3847/2041-8213/ac9f17

- 2022** **Title:** Early Results from GLASS-JWST. I: Confirmation of Lensed $z \geq 7$ Lyman-break Galaxies behind the Abell 2744 Cluster with NIRISS
Authors: Roberts-Borsani, G. ; Morishita, T. ; Treu, T. ; Brammer, G. ; Strait, V. ; Wang, X. ; Bradac, M. ; Acebron, A. ; **Bergamini, P.** ; Boyett, K. ; Calabró, A. ; Castellano, M. ; Fontana, A. ; Glazebrook, K. ; Grillo, C. ; Henry, A. ; Jones, T. ; Malkan, M. ; Marchesini, D. ; Mascia, S. ; Mason, C. ; Mercurio, A. ; Merlin, E. ; Nanayakkara, T. ; Pentericci, L. ; Rosati, P. ; Santini, P. ; Scarlata, C. ; Trenti, M. ; Vanzella, E. ; Vulcani, B. ; Willott, C.
Journal: The Astrophysical Journal Letters, Volume 938, Issue 2, id.L13, 7 pp. - arXiv:2207.11387
doi: 10.3847/2041-8213/ac8e6e
- 2022** **Title:** First JWST observations of a gravitational lens. Mass model of new multiple images with near-infrared observations of SMACS J0723.3-7327
Authors: Caminha, G. B. ; Suyu, S. H. ; Mercurio, A. ; Brammer, G. ; **Bergamini, P.** ; Acebron, A. ; Vanzella, E.
Journal: Astronomy & Astrophysics, Volume 666, id.L9, 10 pp. - arXiv:2207.07567
doi: 10.1051/0004-6361/202244517
- 2022** **Title:** The GLASS-JWST Early Release Science Program. I. Survey Design and Release Plans
Authors: Treu, T. ; Roberts-Borsani, G. ; Bradac, M. ; Brammer, G. ; Fontana, A. ; Henry, A. ; Mason, C. ; Morishita, T. ; Pentericci, L. ; Wang, X. ; Acebron, A. ; Bagley, M. ; **Bergamini, P.** ; Belfiori, D. ; Bonchi, A. ; Boyett, K. ; Boutsia, K. ; Calabro, A. ; Caminha, G. B. ; Castellano, M. ; Dressler, A. ; Glazebrook, K. ; Grillo, C. ; Jacobs, C. ; Jones, T. ; Kelly, P. ; Leethochawalit, N. ; Malkan, M. ; Marchesini, D. ; Mascia, S. ; Mercurio, A. ; Merlin, E. ; Nanayakkara, T. ; Paris, D. ; Poggianti, B. ; Rosati, P. ; Santini, P. ; Scarlata, C. ; Shipley, H. ; Strait, V. ; Trenti, M. ; Tubthong, C. ; Vanzella, E. ; Vulcani, B. ; Yang, L.
Journal: The Astrophysical Journal, Volume 935, Issue 2, id.110, 17 pp. - arXiv:2206.07978
doi: 10.3847/1538-4357/ac8158
- 2022** **Title:** Galaxies in the central regions of simulated galaxy clusters
Authors: Ragagnin, A. ; Meneghetti, M. ; Bassini, L. ; Ragone-Figueroa, C. ; Granato, G. L. ; Despali, G. ; Giocoli, C. ; Granata, G. ; Moscardini, L. ; **Bergamini, P.** ; Rasia, E. ; Valentini, M. ; Borgani, S. ; Calura, F. ; Dolag, K. ; Grillo, C. ; Mercurio, A. ; Murante, G. ; Natarajan, P. ; Rosati, P. ; Taffoni, G. ; Tornatore, L. ; Tortorelli, L.
Journal: Astronomy & Astrophysics, Volume 665, id.A16, 11 pp. - arXiv:2204.09067
doi: 10.1051/0004-6361/202243651
- 2022** **Title:** The probability of galaxy-galaxy strong lensing events in hydrodynamical simulations of galaxy clusters
Authors: Meneghetti, M. ; Ragagnin, A. ; Borgani, S. ; Calura, F. ; Despali, G. ; Giocoli, C. ; Granato, G. L. ; Grillo, C. ; Moscardini, L. ; Rasia, E. ; Rosati, P. ; Angora, G. ; Bassini, L. ; **Bergamini, P.** ; Caminha, G. B. ; Granata, G. ; Mercurio, A. ; Metcalf, R. B. ; Natarajan, P. ; Nonino, M. ; Venusta Pignataro, G. ; Ragone-Figueroa, C. ; Vanzella, E. ; Acebron, A. ; Dolag, K. ; Murante, G. ; Taffoni, G. ; Tornatore, L. ; Tortorelli, L. ; Valentini, M.
Journal: Astronomy & Astrophysics, Volume 668, id.A188, 14 pp. - arXiv:2204.09065
doi: 10.1051/0004-6361/202243779
- 2022** **Title:** Improved strong lensing modelling of galaxy clusters using the Fundamental Plane: Detailed mapping of the baryonic and dark matter mass distribution of Abell S1063
Authors: Granata, G. ; Mercurio, A. ; Grillo, C. ; Tortorelli, L. ; **Bergamini, P.** ; Meneghetti, M. ; Rosati, P. ; Caminha, G. B. ; Nonino, M.
Journal: Astronomy & Astrophysics, Volume 659, id.A24, 15 pp. - arXiv:2107.09079
doi: 10.1051/0004-6361/202141817

- 2022** **Title:** High star cluster formation efficiency in the strongly lensed Sunburst Lyman-continuum galaxy at $z=2.37$
Authors: Vanzella, E.; Castellano, M.; [Bergamini, P.](#); Meneghetti, M.; Zanela, A.; Calura, F.; Caminha, G. B.; Rosati, P.; Cupani, G.; Mestric, U.; Brammer, G.; Tozzi, P.; Mercurio, A.; Grillo, C.; Sani, E.; Cristiani, S.; Nonino, M.; Merlin, E.; Pignataro, G. V.
Journal: *Astronomy & Astrophysics*, Volume 659, id.A2, 17 pp. - arXiv:2106.10280
doi: 10.1051/0004-6361/202141590
- 2022** **Title:** Exploring the physical properties of lensed star-forming clumps at $2 \leq z \leq 6$
Authors: Meštrić, U.; Vanzella, E.; Zanela, A.; Castellano, M.; Calura, F.; Rosati, P.; [Bergamini, P.](#); Mercurio, A.; Meneghetti, M.; Grillo, C.; Caminha, G. B.; Nonino, M.; Merlin, E.; Cupani, G.; Sani, E.
Journal: *Monthly Notices of the Royal Astronomical Society*, Volume 516, Issue 3, pp.3532-3555 - arXiv:2202.09377
doi: 10.1093/mnras/stac2309
- 2022** **Title:** VLT/MUSE observations of SDSS J1029+2623: towards a high-precision strong lensing model
Authors: Acebron, A.; Grillo, C.; [Bergamini, P.](#); Mercurio, A.; Rosati, P.; Caminha, G. B.; Tozzi, P.; Brammer, G. B.; Meneghetti, M.; Morelli, A.; Nonino, M.; Vanzella, E.
Journal: *The Astrophysical Journal*, Volume 926, Issue 1, id.86, 17 pp. - arXiv:2111.05871
doi: 10.3847/1538-4357/ac3d35
- 2021** **Title:** CLASH-VLT: Abel S1063. Cluster assembly history and spectroscopic catalogue
Authors: Mercurio, A.; Rosati, P.; Biviano, A.; Annunziatella, M.; Girardi, M.; Sartoris, B.; Nonino, M.; Brescia, M.; Riccio, G.; Grillo, C.; Balestra, I.; Caminha, G. B.; De Lucia, G.; Gobat, R.; Seitz, S.; Tozzi, P.; Scodeggio, M.; Vanzella, E.; Angora, G.; [Bergamini, P.](#); Borgani, S.; Demarco, R.; Meneghetti, M.; Strazzullo, V.; Tortorelli, L.; Umetsu, K.; Fritz, A.; Gruen, D.; Kelson, D.; Lombardi, M.; Maier, C.; Postman, M.; Rodighiero, G.; Ziegler, B.
Journal: *Astronomy & Astrophysics*, Volume 656, id.A147, 24 pp. - arXiv:2109.03305
doi: 10.1051/0004-6361/202142168
- 2021** **Title:** A strong lensing model of the galaxy cluster PSZ1 G311.65-18.48
Authors: Pignataro, G. V.; [Bergamini, P.](#); Meneghetti, M.; Vanzella, E.; Calura, F.; Grillo, C.; Rosati, P.; Angora, G.; Brammer, G.; Caminha, G. B.; Mercurio, A.; Nonino, M.; Tozzi, P.
Journal: *Astronomy & Astrophysics*, Volume 655, id.A81, 16 pp. - arXiv:2106.10286
doi: 10.1051/0004-6361/202141586
- 2021** **Title:** A new high-precision strong lensing model of the galaxy cluster MACS J0416.1–2403. Robust characterization of the cluster mass distribution from VLT/MUSE deep observations
Authors: [Bergamini, P.](#); Rosati, P.; Vanzella, E.; Caminha, G. B.; Grillo, C.; Mercurio, A.; Meneghetti, M.; Angora, G.; Calura, F.; Nonino, M.; Tozzi, P.
Journal: *Astronomy & Astrophysics*, Volume 645, id.A140, 15 pp. - arXiv:2010.00027
doi: 10.1051/0004-6361/202039564
- 2021** **Title:** Cluster strong lensing with hierarchical inference. Formalism, functional tests, and public code release
Authors: [Bergamini, P.](#); Agnello, A.; Caminha, G. B.
Journal: *Astronomy & Astrophysics*, Volume 648, id.A123, 16 pp. - arXiv:2008.11728
doi: 10.1051/0004-6361/201937138

- 2021** **Title:** The MUSE Deep Lensed Field on the Hubble Frontier Field MACS J0416. Star-forming complexes at cosmological distances.
Authors: Vanzella, E.; Caminha, G. B.; Rosati, P.; Mercurio, A.; Castellano, M.; Meneghetti, M.; Grillo, C.; Sani, E.; **Bergamini, P.**; Calura, F.; Caputi, K.; Cristiani, S.; Cupani, G.; Fontana, A.; Gilli, R.; Grazian, A.; Gronke, M.; Mignoli, M.; Nonino, M.; Pentericci, L.; Tozzi, P.; Treu, T.; Balestra, I.; Dijkstra, M.
Journal: Astronomy & Astrophysics, Volume 646, id.A57, 39 pp. - arXiv:2009.08458
doi: 10.1051/0004-6361/202039466
- 2021** **Title:** Systematic search for lensed X-ray sources in the CLASH fields.
Authors: Liu, A.; Tozzi, P.; Rosati, P.; **Bergamini, P.**; Caminha, G. B.; Gilli, R.; Grillo, C.; Meneghetti, M.; Mercurio, A.; Nonino, M.; Vanzella, E.
Journal: Astronomy & Astrophysics, Volume 648, id.A47, 22 pp. - arXiv:2102.05788
doi: 10.1051/0004-6361/202040249
- 2021** **Title:** Constraints on the [CII] luminosity of a proto-globular cluster at $z \sim 6$ obtained with ALMA
Authors: Calura, F.; Vanzella, E.; Carniani, S.; Gilli, R.; Rosati, P.; Meneghetti, M.; Paladino, R.; Decarli, R.; Brusa, M.; Lupi, A.; D'Amato, Q.; **Bergamini, P.**; Caminha, G. B.
Journal: Monthly Notices of the Royal Astronomical Society, Volume 500, Issue 3, pp.3083-3094 - arXiv:2010.07302
doi: 10.1093/mnras/staa3185
- 2020** **Title:** The search for galaxy cluster members with deep learning of panchromatic HST imaging and extensive spectroscopy
Authors: Angora, G.; Rosati, P.; Brescia, M.; Mercurio, A.; Grillo, C.; Caminha, G.; Meneghetti, M.; Nonino, M.; Vanzella, E.; **Bergamini, P.**; Biviano, A.; Lombardi, M.
Journal: Astronomy & Astrophysics, Volume 643, id.A177, 25 pp. - arXiv:2009.08224
doi: 10.1051/0004-6361/202039083
- 2020** **Title:** An excess of small-scale gravitational lenses observed in galaxy clusters
Authors: Meneghetti, M.; Davoli, G.; **Bergamini, P.**; Rosati, P.; Natarajan, P.; Giocoli, C.; Caminha, G. B.; Metcalf, R. B.; Rasia, E.; Borgani, S.; Calura, F.; Grillo, C.; Mercurio, A.; Vanzella, E.
Journal: Science, Volume 369, Issue 6509, pp. 1347-1351 (2020) - arXiv:2009.04471
doi: 10.1126/science.aax5164
- 2020** **Title:** CLASH-VLT: a full dynamical reconstruction of the mass profile of Abell S1063 from 1 kpc out to the virial radius
Authors: Sartoris, B.; Biviano, A.; Rosati, P.; Mercurio, A.; Grillo, C.; Ettori, S.; Nonino, M.; Umetsu, K.; **Bergamini, P.**; Caminha, G. B.; Girardi, M.
Journal: Astronomy & Astrophysics, Volume 637, id.A34, 11 pp. - arXiv:2003.08475
doi: 10.1051/0004-6361/202037521
- 2020** **Title:** An accurate strong lensing model of the Abell 2163 core
Authors: Rescigno, U.; Grillo, C.; Lombardi, M.; Rosati, P.; Caminha, G. B.; Meneghetti, M.; Mercurio, A.; **Bergamini, P.**; Coe, D.
Journal: Astronomy & Astrophysics, Volume 635, id.A98, 12 pp. - arXiv:1910.08117
doi: 10.1051/0004-6361/201936590

- 2019 Title:** Strong lensing models of eight CLASH clusters from extensive spectroscopy: accurate total mass reconstructions in the cores
Authors: Caminha, G. B.; Rosati, P.; Grillo, C.; Rosani, G.; Caputi, K. I.; Meneghetti, M.; Mercurio, A.; Balestra, I.; **Bergamini, P.**; Biviano, A.; Nonino, M.; Umetsu, K.; Vanzella, E. and Annunziatella, M.; Broadhurst, T.; Delgado- Correal, C.; Demarco, R.; Koekemoer, A. M.; Lombardi, M.; Maier, C.; Verdugo, M.; Zitrin, A.
Journal: Astronomy & Astrophysics, Volume 632, id.A36, 27 pp. - arXiv:1903.05103
doi: 10.1051/0004-6361/201935454
- 2019 Title:** Enhanced cluster lensing models with measured galaxy kinematics
Authors: **Bergamini, P.**; Rosati, P.; Mercurio, A.; Grillo, C.; Caminha, G. B.; Meneghetti, M.; Agnello, A.; Biviano, A.; Calura, F.; Giocoli, C.; Lombardi, M.; Rodighiero, G.; Vanzella, E.
Journal: Astronomy & Astrophysics, Volume 631, id.A130, 16 pp. - arXiv:1905.13236
doi: 10.1051/0004-6361/201935974
- 2019 Title:** Rejuvenated galaxies with very old bulges at the origin of the bending of the main sequence and of the “green valley”
Authors: Mancini, C.; Daddi, E.; Juneau, S.; Renzini, A.; Rodighiero, G.; Cappellari, M.; Rodríguez-Muñoz, L.; Liu, D.; Pannella, M.; Baronchelli, I.; Franceschini, A.; **Bergamini, P.**; D'Eugenio, C.; Puglisi, A.
Journal: Monthly Notices of the Royal Astronomical Society, Volume 489, Issue 1, p.1265-1290 - arXiv:1901.04573
doi: 10.1093/mnras/stz2130
- 2017 Title:** Magnifying the early episodes of star formation: super star clusters at cosmological distances
Authors: Vanzella, E.; Castellano, M.; Meneghetti, M.; Mercurio, A.; Caminha, G. B.; Cupani, G.; Calura, F.; Christensen, L.; Merlin, E.; Rosati, P.; Gronke, M.; Dijkstra, M.; Mignoli, M.; Gilli, R.; De Barros, S.; Caputi, K.; Grillo, C.; Balestra, I.; Cristiani, S.; Nonino, M.; Giallongo, E.; Grazian, A.; Pentericci, L.; Fontana, A.; Comastri, A.; Vignelli, C.; Zamorani, G.; Brusa, M.; **Bergamini, P.**; Tozzi, P.
Journal: The Astrophysical Journal, Volume 842, Issue 1, article id. 47, 10 pp. (2017) - arXiv:1703.02044
doi: 10.3847/1538-4357/aa74ae
- Proceeding, 2020 Title:** EXPERIENCES IN INSPYRE: INTERNATIONAL SCHOOL ON MODERN PHYSICS AND RESEARCH
Authors: Bertelli, S.; Arnone, S.; **Bergamini, P.**; Bernardoni, P.; Bifaretti, D.; Cestelli Guidi, M.; Centioni, R.; Corcella, G.; Curceanu, C.; Gadda, G.; Testa, M.
Conference: 14th International Technology, Education and Development Conference
City: Valencia, Spain
doi: 10.21125/inted.2020.2411

APPROVED OBSERVATIONAL PROGRAMS

Co-I of numerous James Webb Space Telescope (JWST) and Very Large Telescope (VLT) observational programs mainly focused on strong lensing in galaxy clusters and high-redshift galaxies.

About 50 hours of JWST observations

About 100 hours of observations with ESO facilities

JWST Proposal (Col) JWST Proposal. Cycle 2, ID. 3073 (PI: M. Castellano)

Allocated time: 23.7 hours

Title: “Spectroscopic confirmation of an unexpected population of bright galaxies at cosmic dawn”

- JWST Proposal (Col)** **JWST Proposal. Cycle 1, ID. 1908 (PI: E. Vanzella)**
Allocated time: 24.1 hours
Title: “Constraining the nature of the first stellar complexes: globular cluster precursors and Population III stellar clusters at $z \sim 6-7$ ”
- ESO/VST Proposal (Col)** **VST/OMEGACAM. GTO, period 99, ID. 099.A-0567(A) (PI: A. Mercurio)**
Allocated time: 1.9 hours
Title: “VST-GAME: GALAXY ASSEMBLY AS A FUNCTION OF MASS AND ENVIRONMENT WITH VST.”
- ESO/VST Proposal (Col)** **VST/OMEGACAM. GTO, period 99, ID. 099.A-0567(B) (PI: A. Mercurio)**
Allocated time: 1.2 hours
Title: “VST-GAME: GALAXY ASSEMBLY AS A FUNCTION OF MASS AND ENVIRONMENT WITH VST.”
- ESO/VST Proposal (Col)** **VST/OMEGACAM. GTO, period 99, ID. 099.A-0567(C) (PI: A. Mercurio)**
Allocated time: 0.8 hours
Title: “VST-GAME: GALAXY ASSEMBLY AS A FUNCTION OF MASS AND ENVIRONMENT WITH VST.”
- ESO/VST Proposal (Col)** **VST/OMEGACAM. GTO, period 99, ID. 099.A-0567(D) (PI: A. Mercurio)**
Allocated time: 1.4 hours
Title: “VST-GAME: GALAXY ASSEMBLY AS A FUNCTION OF MASS AND ENVIRONMENT WITH VST.”
- ESO/VLT Proposal (Col)** **VLT/MUSE. GTO, period 105, ID. 105.20P5.001 aka 0105.A-0272(A) (PI: A. Mercurio)**
Allocated time: 5.0 hours
Title: “REFINING THE MEASUREMENT OF H_0 WITH SN REFSDAL AND DETERMINING THE INTRINSIC PHYSICAL PROPERTIES OF A $Z=9.1$ PROTO-GALAXY”
- ESO/VLT Proposal (Col)** **VLT/MUSE. DDT, period 107, ID. 107.22SK.001 aka 2107.D-5057(A) (PI: E. Vanzella)**
Allocated time: 5.0 hours
Title: “THE CONUNDRUM OF THE TRANSIENT STELLAR OBJECT IN THE SUNBURST ARC (SCTYPE-C)”
- ESO/VLT Proposal (Col)** **VLT/XSHOOTER. DDT, period 107, ID. 107.22UF.001 aka 2107.A-5062(A) (PI: E. Vanzella)**
Allocated time: 1.3 hours
Title: “HIGH-RISK/HIGH-GAIN: MAKING THE PROBE OF A POPIII STAR COMPLEX AT $Z=6.629$ FEASIBLE WITH VLT (SCTYPE-R)”
- ESO/VLT Proposal (Col)** **VLT/XSHOOTER. Normal, period 110, ID. 110.244H.001 aka 0110.B-4233(A) (PI: E. Vanzella)**
Allocated time: 37.5 hours
Title: “X-SHOOTER EXPLORES POPULATION III STAR COMPLEX AT $Z=6.629$ AND A PROTO-GLOBULAR AT $Z=3.235$ ”
- ESO/VLT Proposal (Col)** **VLT/MUSE. Normal, period 110, ID. 110.249D.001 aka 0110.B-0242(A) (PI: E. Vanzella)**
Allocated time: 7.0 hours
Title: “THE CONUNDRUM OF THE TRANSIENT STELLAR OBJECT IN THE SUNBURST ARC AT $Z=2.37$ ”

ESO/VLT Proposal (Col) **VLT/XSHOOTER. Normal, period 111, ID. 111.253B.001 aka 0111.B-0243(A) (PI: A. Bolamperti)**
Allocated time: 39.0 hours
Title: "EXPLORING A CANDIDATE POPULATION III CLUMP AT Z=6.15 AND ITS LYMAN-ALPHA EMISSION"

ESO/VLT Proposal (Col) **VLT/ERIS. Normal, period 112, ID. 112.25HA.001 aka 0112.B-2229(A) (PI: A. Zanella)**
Allocated time: 2.5 hours
Title: "INVESTIGATING THE KINEMATICS OF STAR-FORMING CLUMPS AT HIGH-REDSHIFT"

MAIN COLLABORATIONS

Since 2023 Reviewer of numerous observational proposals for the VLT Survey Telescope (VST, <https://www.eso.org/public/italy/teles-instr/paranal-observatory/surveytelescopes/vst/>)

Since 2022 Reviewer for the "Astronomy & Astrophysics" (A&A) and "The Astrophysical Journal" (ApJ) journals

Since 2023 Co-I and co-creator of the "Gravitational Lensing Lab" project (progetto di Terza Missione INAF) with PI A. Mercurio. The aim of the project is to develop an advanced, computerized optical system capable of accurately simulating gravitational lensing phenomena using optical lenses.

Since 2022 Member of the GLASS-JWST collaboration with PI T. Treu. In this context, I have developed the first strong lensing model for the galaxy cluster Abell 2744 based on JWST data (Bergamini et al. 2023a). This model has enabled to study some of the most distant sources ever observed, providing insights into the evolution of the stellar systems within the first billion years after the Big Bang (<https://glass.astro.ucla.edu/ers/>).

Since 2022 Collaborator of the PRIN2020 (*Progetti di Ricerca di rilevante Interesse Nazionale*, financed by MUR) project "GRAvitational lensing in galaxy clusters next-generation proposAL" (GRAAL) with PI C. Grillo. In this collaboration, I am the main responsible for the work package dedicated to the development and use of strong gravitational lensing models of galaxy clusters.

Since 2021 Member of the collaboration resulting from the ESO observational program "MUSE Deep Lensed Field" (MLDF [Prog.ID 0100.A-0763(A)]) with PI E. Vanzella. In this context, I have developed a state-of-the-art strong lensing model for the galaxy cluster MACS J0416.1–2403 containing 237 spectroscopically confirmed multiple images, which is one of the largest sample of secure multiply-lensed sources utilized to date (Bergamini et al. 2023b).

Since 2019 Member of the Euclid consortium. As a member of the strong lensing working group, I have actively participated in numerous research. Additionally, I have developed a software (HST2EUCLID, presented in a publication) to create realistic mock Euclid observations starting from real *Hubble* observations. The software is currently widely used by various research groups within the Euclid collaboration.

From 2019 to 2022 Collaborator of the PRIN2017 (*Progetti di Ricerca di rilevante Interesse Nazionale*, financed by MUR) project "Zooming into Dark Matter and proto-galaxies with massive lensing clusters" with PI P. Rosati. In this context, I have developed numerous strong gravitational lensing models of galaxy clusters that are widely used by the scientific community.

From 17/02/2019 to 04/03/2019 Collaboration with Dr. Adriano Agnello at the "DARK Cosmology Centre" in Copenhagen for the development of a novel code, based on a Bayesian hierarchical inference formalism, designed to enhance gravitational lens models of galaxy clusters.

Since 2016 Member of the collaboration resulting from the VLT/VIMOS+MUSE Large Programme (more than 200 hours of observations) "Dark Matter Mass Distributions of Hubble Treasury Clusters and the Foundations of LCDM Structure Formation Models" (CLASH-VLT, PI P. Rosati).

Since 2016 Member of the Istituto Nazionale di Astrofisica (INAF).

CONFERENCES AND SEMINARS

Participation in more than 30 conferences mostly focused on galaxy clusters and gravitational lensing. More than 20 contributed talks and invited speaker at three conferences. Speaker for many seminars at Universities and research institutes (e.g., Max Planck Institute for Astrophysics).

See below for details

- 07/2024 - Pescara, Italy** **Seventeenth Marcel Grossmann Meeting** (<https://indico.icranet.org/event/8/>)
Invited talk: A new era of strong gravitational lensing by galaxy clusters.
- 06/2024 - Sexten, Italy** **A lens on globular cluster nurseries: how to compare optimally models with observations** (<https://www.sexten-cfa.eu/event/lensglobular24/>)
Invited talk: Galaxy clusters as cosmic telescopes to reveal the first sources assembled after the Big Bang.
- 02/2024 - Bologna, Italy** **Euclid Face-to-Face Meeting Bologna** (https://euclid.roe.ac.uk/projects/slsww/wiki/Next_Face-to-Face_Meeting_Bologna_12-14_Feb_2024)
Contributed talk: Euclid simulated observations of galaxy clusters.
- 11/2023 - Milan, Italy** **Zooming PRIN - latest developments and future perspectives** (<https://sites.google.com/view/zoomingprinworkshop/home>)
Contributed talk: Strong lensing in the JWST era: Models and applications.
- 09/2023 - Salerno, Italy** **109° Congresso Nazionale SIF** (<https://2023.congresso.sif.it/>)
Contributed talk: High-precision strong lensing models of galaxy clusters in the JWST era.
- 07/2023 - Sexten, Italy** **The James Webb Space Telescope turns one: the birth and growth of galaxies** (<https://www.sexten-cfa.eu/event/jwebb23/>)
Contributed talk: High-precision strong lensing models of galaxy clusters in the JWST era.
- 06/2023 - Otranto, Italy** **IAUS 381: Strong gravitational lensing in the era of big data** (<https://hrsastro.github.io/>)
Contributed talk: High-precision strong lensing models of galaxy clusters in the JWST era.
- 05/2023 - Rome, Italy** **JWST GLASS collaboration meeting** (<https://glass.astro.ucla.edu/ers/index.html>)
Contributed talk: High-precision, JWST-based, strong lensing model for the galaxy cluster Abell 2744.
- 01/2023 - Milan, Italy** **A golden era in strong gravitational lensing: new data, modelling and applications.** (<https://sites.google.com/view/zooming-prin-workshop/home?pli=1>)
Contributed talk: High-precision strong lensing models of galaxy clusters: Modelling and applications.
- 07/2022 - Sexten, Italy** **Zooming into dark matter and proto-galaxies with gravitational lensing** (<https://www.sexten-cfa.eu/event/zooming-into-dark-matter-and-proto-galaxies-with-gravitational-lensing/>)
Contributed talk: A new generation of high-precision strong lensing models of galaxy clusters: applications in the JWST era.

- 06/2022 - Valencia, Spain **European Astronomical Society Annual Meeting 2022** (<https://eas.unige.ch/EAS2022/>)
Contributed talk: A new generation of high-precision strong lensing models of galaxy clusters: applications in the JWST era.
Poster: Detailed studies of the inner dark matter distribution of galaxy clusters through a new generation of high-precision strong lensing models.
- 03/05/2022 - Milan, Italy **INAF Brera - Seminari** (<http://www.brera.inaf.it/?page=semi;prossimi=false;anno=2022>)
Contributed talk: A new generation of high-precision strong lensing models of galaxy clusters: applications in the JWST and EUCLID era.
- 04/2022 - Oslo, Norway (online participation) **Euclid Consortium meeting 2022** (<https://www.mn.uio.no/astro/english/research/news-and-events/events/conferences/ECmeeting2022/index.html>)
Contributed talk: Euclidization of Hubble images.
- 10/2021 - Garching, Germany **Max Planck institute for Astrophysics (MPA) Cosmology Seminar** (https://wwwmpa.mpa-garching.mpg.de/cosmo_seminars/index_2021.html)
Contributed talk: Cosmological applications of high-precision strong lensing models of galaxy clusters.
- 10/2021 - Ferrara, Italy **Zooming PRIN meeting** (<https://drive.google.com/file/d/1qpBhsSRNRW8CnJQCskfCur-0DpzjtjOAX/view>)
Contributed talk: A new super-constrained strong lensing model for the galaxy cluster MACS J0416.
- 07/2021- Online **Sixteenth Marcel Grossmann meeting** (<https://indico.icranet.org/event/1/>)
Invited talk: An excess of small scale strong lenses observed in galaxy clusters.
- 02/2021 - Online **4° Meeting Nazionale Collaborazione Euclid** (<https://indico.ict.inaf.it/event/1302/>)
- 02/2020 - Bologna, Italy **3° Meeting Nazionale Collaborazione Euclid** (indico.ict.inaf.it/event/981/)
- 07/2019 - Sexten, Italy **Hot Topics in Astrophysics** (www.sexten-cfa.eu/event/hot-topics-in-astrophysics/).
Contributed talk: Combining Lensing and Dynamics to model the mass distribution of clusters.
- 07/2019 - Sexten, Italy **Tracing cosmic evolution with clusters of galaxies** (www.sexten-cfa.eu/event/tracing-cosmic-evolution-with-clusters-of-galaxies/).
Contributed talk: Improving galaxy cluster strong lensing models using internal dynamics of cluster members.
- 02/2019 - Ferrara, Italy **Second EJD STIMULATE School on "Fundamentals of Data"** (agenda.infn.it/event/17284/).
- 09/2018 - Naples, Italy **CLUSTER2: A view from Italy on galaxy clusters in the 21st century** (sites.google.com/view/cluster2).
Contributed talk: Improving galaxy cluster strong lensing models using internal dynamics of cluster members.
- 09/2018 - Milan, Italy **The Universe as a telescope: Probing the cosmos at all scales with strong lensing** (sites.google.com/site/lensing2018/home).
Contributed talk: Improving galaxy cluster strong lensing models using internal dynamics of cluster members.
- 06/2018 - L'Aquila, Italy **The Dark side of the Universe** (www.gssi.it/seminars/seminars-and-events-2018/item/3314-the-dark-side-of-the-universe).

- 08/2017 - Angra do Heroísmo, Açores, Portugal **"Cosmology and fundamental physics with current and future ESO facilities": 3rd Azores School on Observational Cosmology, 5th Azores International Advanced School in Space Sciences** (www.iaastro.pt/research/conferences/azores17/).
- 07/2017 - Sexten, Italy **Exploring Dark Matter and Dark Ages with lensing clusters** (<https://www.sexten-cfa.eu/event/exploring-dark-matter-and-dark-ages-with-lensing-clusters/>).
- 06/2017 - Annecy, France **1st ASTERICS-OBELICS International School: "Advanced software programming for astrophysics and astroparticle physics"** (indico.in2p3.fr/event/14227/overview).
- 03/2017 - Venice, Italy **Science with Hubble and JWST V** (<https://www.stsci.edu/contents/events/jwst/2017/march/science-with-hubble-and-jwst-v?fromDate=03/01/2017&timeframe=past&toDate=03/31/2017&filterUUID=24ba27ed-9d32-4e90-aad8-3ee1a1784ae8>).
- 01/2017 - Naples, Italy **Bright and Dark Universe** (<https://www.unina.it/-/13717352-a-napoli-il-workshop-internazionale-su-dark-matter-e-dark-energy>).
- 06/2016 - Ferrara, Italy **1st MUSE VLT spectroscopy meeting.**
- 12/2015 - Trieste, Italy **CLASH-VLT meeting.**
- 09/2015 - Florence, Italy **CLASH-VLT meeting.**
- 09/2015 - Ferrara, Italy **Astrophysical probes of fundamental physics.**

TEACHING EXPERIENCE

Co-supervision of 12 Bachelor's and Master's degree theses in Physics and Astronomy, with a focus on galaxy clusters and gravitational lensing.
See below for details

- 2024 - Milan, Italy Tutoring of "Laboratorio di Astronomia" for Physicists (25 hours) at Università degli Studi di Milano (UNIMI, Physics department)
- 2024 - Ferrara, Italy Co-supervision of a master's degree thesis in Physics at Università degli Studi di Ferrara (UNIFE)
Student: G. Di Rosa
Thesis title: Gravitational lensing modelling of galaxy clusters with multiply lensed quasars and prospects for cosmography
- 2024 - Milan, Italy Co-supervision of a bachelor's degree thesis in Physics at Università degli Studi di Milano (UNIMI)
Student: G. De Toma
Thesis title: THE IMPACT OF SUPERMASSIVE BLACK HOLES IN STRONG LENSING MODELS OF GALAXY CLUSTERS
- 2023 - Milan, Italy Co-supervision of a bachelor's degree thesis in Physics at Università degli Studi di Milano (UNIMI)
Student: G. Guaita
Thesis title: STIME DI REDSHIFT DI SORGENTI DISTANTI ATTRAVERSO MODELLI DI LENSING GRAVITAZIONALE FORTE DI AMMASSI DI GALASSIE

- 2023 - Milan, Italy Co-supervision of a master's degree thesis in Physics at Università degli Studi di Milano (UNIMI)
Student: E. Maraboli
Thesis title: HOT GAS TEMPERATURE PROFILE AND MASS MODELING IN CLUSTERS OF GALAXIES
- 2023 - Milan, Italy Tutoring of "Laboratorio di Astronomia" for Physicists (20 hours) at Università degli Studi di Milano (UNIMI, Physics department)
- 2023 - Milan, Italy Co-supervision of a bachelor's degree thesis in Physics at Università degli Studi di Milano (UNIMI)
Student: F. Citterio
Thesis title: IMPACT OF THE MULTIPLE IMAGE SUBSTRUCTURE ON THE STRONG GRAVITATIONAL LENSING MODELING OF GALAXY CLUSTERS
- 2023 - Bologna, Italy Co-supervision of a master's degree thesis in Astronomy at Università degli Studi di Bologna (UNIBO)
Student: I. Mini
Thesis title: Image simulations of highly magnified clumpy galaxies
- 2022 - Milan, Italy Tutoring of "Laboratorio di Astronomia" for Physicists (20 hours) at Università degli Studi di Milano (UNIMI, Physics department)
- 2022 - Milan, Italy Co-supervision of a bachelor's degree thesis in Physics at Università degli Studi di Milano (UNIMI)
Student: M. Picciolini
Thesis title: ANALISI DELL'IMPATTO DELL'APPROSSIMAZIONE SFERICA PER GALASSIE DI AMMASSO SULLA POSIZIONE DELLE IMMAGINI MULTIPLE IN SISTEMI DI LENSING GRAVITAZIONALE FORTE
- 2021 - Bologna, Italy Co-supervision of a master's degree thesis in Astronomy at Università degli Studi di Bologna (UNIBO)
Student: G. Pignataro
Thesis title: A high-precision strong lensing model of the galaxy cluster PSZ1 G311.65-18.48
- 2021 - Bologna, Italy Co-supervision of a master's degree thesis in Astronomy at Università degli Studi di Bologna (UNIBO)
Student: A. Margheri
Thesis title: Strong lensing analysis of galaxy clusters observed by Euclid
- 2021 - Ferrara, Italy Co-supervision of a bachelor's degree thesis in Physics at Università degli Studi di Ferrara (UNIFE)
Student: A. Morelli
Thesis title: Sviluppo di un modello di massa dell'ammasso di galassie SDSS J1029+2623 con il software Lenstool
- 2021 - Ferrara, Italy Co-supervision of a bachelor's degree thesis in Physics at Università degli Studi di Ferrara (UNIFE)
Student: G. Di Rosa
Thesis title: Rivelazione di moti propri di sotto-aloni di materia oscura in ammassi di galassie con la tecnica delle lenti gravitazionali

- 2018 - Ferrara, Italy Co-supervision of a bachelor's degree thesis in Physics at Università degli Studi di Ferrara (UNIFE)
Student: R. Stefanizzi
Thesis title: RITARDI TEMPORALI DA LENTI GRAVITAZIONALI SU SCALA DI AMMASSI DI GALASSIE ED APPLICAZIONI PER LA MISURA DELLA COSTANTE DI HUBBLE
- 2018 - Padova, Italy Tutoring of "FISICA I" for Astronomers (55 hours) at Università degli Studi di Padova (UNIPD, Department of Astronomy)
- 2018 - Padova, Italy Tutoring of "ANALISI I" for Astronomers (30 hours) at Università degli Studi di Padova (UNIPD, Department of Astronomy)
- 2016 - Ferrara, Italy Tutoring of "FISICA" for Biologists (24 hours) at Università degli Studi di Ferrara (UNIFE, Department of Biology and Life Science)
- 2015 - Ferrara, Italy Tutoring of "FISICA I" for Physicists (30 hours) at Università degli Studi di Ferrara (UNIFE, Department of Physics and Earth Science)
- 2015 - Ferrara, Italy Tutoring of "FISICA" for Biologists (40 hours) at Università degli Studi di Ferrara (UNIFE, Department of Biology and Life Science)
- 2015 - Ferrara, Italy Tutoring of "FISICA" for Biotechnologists (22 hours) at Università degli Studi di Ferrara (UNIFE, Department of Biology and Life Science)

OUTREACH

Participation and organization of numerous seminars and events for the popularization of science. These activities primarily aim to engage non-experts and encourage their interest in Physics and Astronomy, with a particular emphasis on gravitational lensing.
See below for details

- 20/04/2022 - Radio BlaBlaNetwork **Live radio interview about space-time and gravitational lensing during the radio show "DottoRadio"**
- 15/10/2020 - INFN online **Pomeriggi di Scienza (ed. 2020) - organized by INFN (Laboratori Nazionali di Frascati)**
Contributed talk: Le lenti gravitazionali (live streaming on YouTube with > 10000 visualizations)
Website: <https://edu.lnf.infn.it/pomeriggi-di-scienza-2020/>
- 02/2020 - Ferrara, Italy **Laboratori di Fisica Moderna (ed. 2020) at Università degli Studi di Ferrara**
Project: Gravitational Lensing Lab (6 hours)
Website: https://www.fe.infn.it/orientamento_fisica/?page_id=4339
- 06/2019 - Ferrara, Italy **Stage Estivo di Fisica @UniFE (ed. 2019) at Università degli Studi di Ferrara**
Project: Gravitational Lensing Lab for high-school students (4 hours)
Website: https://www.fe.infn.it/orientamento_fisica/?page_id=3041
- 04/2019 - Frascati, Italy **INSPIRE (International School on modern Physics and REsearch) at Laboratori Nazionali di Frascati (INFN)**
Project: Gravitational Lensing Lab for high-school students (8 hours)
Website: <https://edu.lnf.infn.it/inspire-2019/>

- 10/2018 - Ferrara, Italy **Porte aperte al polo @UniFe (ed. 2018) at Università degli Studi di Ferrara**
Project: Gravitational Lensing Lab
Website: <https://www.unife.it/porteaperte/pst/edizioni-precedenti/edizione-2018>
- 19/04/2018 - Padova, Italy **Conference at the Padova Planetarium**
Contributed talk: Le lenti gravitazionali
Website: <https://www.planetariopadova.it/SpettacoloSerale.php?Spet=125>
- Since 2017 - Padova and Ferrara, Italy **Since 2017, I actively participated in the events “Notte dei ricercatori” organized in the cities of Padova or Ferrara**
- 2023 - Bondeno (FE), Italy **President of the association ‘S.A.D.R. Scienza Astronomia Divulgazione Ricerca’ for the popularization of Science and main responsible of the Bondeno (Fe, Italy) astronomical observatory**
- Others**
- Realization of numerous laboratories and teaching activities at universities and schools
 - Numerous online seminars for the popularization of science

Data

15/07/2024

Luogo

Bondeno, FE