

Giada Casali

Curriculum Vitae

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Date of birth: 1991, December 24

Citizenship: Italian

Affiliations

✉ Research School of Astronomy and Astrophysics, The Australian National University, Canberra, ACT 2611, Australia

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✉ INAF - OAS Bologna, Via Gobetti 93/3, 40129 Bologna (BO) - Italy

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Research Interests

- Galactic archaeology
- Stellar spectroscopy
- Chemical abundances
- Star clusters
- Chemical evolution & structure of the Milky Way
- Stellar age determination using chemical clocks and isochrone fitting

Professional Experience

2024 - Present **Postdoctoral Fellow**, *Research school of Astronomy and Astrophysics*, ANU, Canberra, Australia.

Supervisor: Prof. Luca Casagrande

2021 - 2023 **Postdoctoral Fellow**, *Department of Physics and Astronomy*, University of Bologna, (BO) Italy.

Project: ERC - Asterochronometry: Galactic archaeology with high temporal resolution;
Supervisor: Prof. Andrea Miglio

Education

2017 - 2021 **PhD in Physics and Astronomy**, *University of Florence & INAF - Osservatorio Astrofisico di Arcetri*, (FI) Italy, Defence: March 9, 2021.

Abroad: Stay of 6 months at Monash University, Melbourne, AUS

- Thesis: *Galactic Archaeology with ages based on chemical clocks*
- Supervisors: Dr. Laura Magrini (INAF-OAA) and Prof. Stefania Salvadori (UniFI)
- Collaborator: Dr. Lorenzo Spina (INAF-OAPd)

2014 - 2017 **Master's Degree in Physics**, *Curriculum: Astronomy and Astrophysics*, University of Pisa, (PI) Italy, with a final grade of 108/110. Defence: July 20, 2017.

- Thesis: *Near-Infrared Photometry of the Galactic Globular Cluster M30 (NGC 7099)*
- Supervisors: Prof. Pier Giorgio Prada Moroni (UniPI) and Prof. Giuseppe Bono (Uni-Roma2)
- Collaborator: Dr. Massimo Dall'Ora (INAF-OAC)

2010 - 2014 **Bachelor's Degree in Physics**, University of Pisa, (PI) Italy, with a final grade of 101/110. Defence: February 28, 2014.

- Thesis: *The fluctuation-dissipation theorem and its application to thermal noise in the EGO-VIRGO interferometer.*
- Supervisor: Dr. Giancarlo Cella (INFN-Pisa)

Collaborations

- Gaia-ESO consortium
- SPA, a large observing programme at the TNG
- Working group of ARIEL (stellar characterisation)
- Working group of LSST (Stars, Milky Way and Local Volume)
- Working group of MAVIS

Observing experiences

- 2022, Jul 19 - 23 **Observations with HARPSN@TNG**, *El Roque de los Muchachos Observatory*, La Palma, Canary Islands (SP), Proposals: ID A45TAC_22, A47TAC_9, PI: G. Casali.
- 2023, Jul 25 - 27
- 2020, Feb 10 - 11 **Observations with SOFI, EFOSC2@NTT, DFOSC@Danish, HARPS@ESO 3.6 m**, *La Silla Observatory*, Chile, Observations during the "La Silla Observing Summer School 2020".
- 2019, Dec 04 - 08 **Observations with GIARPS@TNG**, *El Roque de los Muchachos Observatory*, La Palma, Canary Islands (SP), Proposal: SPA 2018.
2018, Aug 18 - 24 (Program ID A37TAC_13, PI: L. Origlia)

PhD schools

- 2021, June 1 - 5 **Summer School in Statistics for Astronomers XVI**, *virtual*, Penn State (US).
- 2020, Feb 03 - 14 **La Silla Observing Summer School**, *ESO*, Santiago de Chile (CL), *Report*.
- 2018, Sept 10 - 14 **IMPRS-HD School: Gaia data & Science**, *Max Planck Institute*, Heidelberg (DE).
- 2018, Feb 26 - Mar 9 **FNHP2018 School: Frontiers in Nuclear and Hadronic Physics**, *Galileo Galilei Institute*, Florence (IT).

Conferences and workshops

- 2023, Oct 16 - 20 **Stars - Across the Universe**, Naples (IT).
Contribute: Talk – Exploiting the orthogonal constraints offered by high-precision age and chemistry
- 2023, Sept 4 - 8 **Spectral Fidelity**, Florence (IT).
Contribute: Talk – Exploiting the orthogonal constraints offered by high-precision age and chemistry
- 2022, Jun 19 - 24 **The 13th Torino workshop on AGB stars**, Perugia (IT).
Contribute: Talk – Cerium in the Kepler and TESS fields
- 2022, Mar 21 - 25 **Abundance gradients to trace Galaxy formation and evolution**, Sexten (IT).
Contribute: Talk – Abundance ratios along the Galactic disc exploiting the power of asteroseismology
- 2021, Oct 18 - 22 **HRMOS science workshop**, Florence (IT).
Contribute: Talk – Synergy between asteroseismology and high-resolution spectroscopy
- 2021, Oct 5 - 7 **Star Clusters: the Gaia Revolution**, *virtual meeting*, Barcelona (SP).
- 2021, June 28 - July 2 **EAS 2021**, *virtual meeting*, Leiden (NL).
Contribute: Talk – A more insightful view on Galactic archaeology using chemical clocks
- 2021, Feb 1 - 3 **Precision Spectroscopy. Stellar connections: from Galaxy evolution to exoplanets**, *virtual meeting*, Sao Paulo (BR).
Contribute: Talk – Galactic archaeology with chemical clocks
- 2019, Sept 24 - 27 **GES2019: The legacy of the Gaia-ESO survey**, Florence (IT).
Contribute: Talk – *Stellar dating using chemical clocks*

- 2018, Sept 3 - 7 **Workshop ESO: A revolution in stellar physics with Gaia and large surveys**, Warsaw (PL).
Contribute: Poster – Calibrating the relationship between age and [C/N] using open clusters
- 2016, April 12 - 14 **Workshop ADONI: Adaptive Optics National Laboratory**, Florence (IT).

Seminars and other talks

- 2022, Nov 15 **Astrophysics Talk**, INAF Bologna (IT).
Contribute: Talk – "Galactic Archaeology with ages based on chemical clocks"
- 2021, Mar 29 **KES: Knowledge Exchange Series**, *virtual seminar*, ESO Garching (DE).
Contribute: Talk – "Galactic Archaeology in the era of large-scale surveys"
- 2021, Mar 22 **Asterochronometry Seminars**, *virtual seminar*, University of Birmingham (UK).
Contribute: Talk – "Galactic Archaeology with ages based on chemical clocks"
- 2020, Nov. 27 **SPOK**, *internal meeting of the star and star forming regions group*, INAF - Osservatorio Astrofisico di Arcetri (FI), Italy.
Contribute: Talk – "Hunting for an extragalactic planet around an accreted star in the Galactic halo".
- 2019, Aug. 6 **SINS**, *internal meeting of the stellar group*, MoCA, Monash University, Melbourne, AUS.
Contribute: Talk – "What are chemical clocks?".
- 2019, Nov. 26 **Astrobigné**, *a short seminar in our Institute*, INAF - Osservatorio Astrofisico di Arcetri (FI), Italy.
Contribute: Talk – "Stellar dating using [C/N] as a chemical clock".
- 2019, Oct. 11 **SPOK**, *internal meeting of the star and star forming regions group*, INAF - Osservatorio Astrofisico di Arcetri (FI), Italy.
Contribute: Talk – "Calibrating a relationship between age and [C/N] abundance ratio with open clusters".
- 2018, May 31 **PhDday**⁹, *day dedicated to the PhD students*, Polo Scientifico, Sesto Fiorentino (FI), Italy.
Contribute: Talk – "Stellar clusters as chemical evolution tracers in the Milky Way and nearby galaxies".

Languages

Italian	Mother tongue
English	Intermediate

Computer skills

Operating Systems	Windows, Linux, macOS
Programming	IDL and Python (very good), R (basic), C (really basic knowledge)
Astronomical software/package	DAOPHOT/ALLSTAR/ALLFRAME/DAOMATCH/DAOMASTER/MONTAGE2
	DAOSPEC, MOOG, DOOp, Fama, q2, IRAF
Astronomical tools	Topcat
Astronomical Viewers	SAOImageDS9, Aladin
Office	L ^A T _E X, Microsoft Office, LibreOffice/OpenOffice, Adobe

Technical skills

- Astrophysics
 - Instrumental calibration, PSF photometry and photometric calibration of infrared data collected with seeing-limited and adaptive optics-assisted telescopes.
 - Comparison between observations and theoretical models (isochrones, ZAHBs)
 - Statistical analysis of big data.
 - Spectral analysis using EWs measurements.
 - Differential spectroscopy of solar twins.

- Statistics
 - Markov Chain Monte Carlo modelling

Publications

Links [Publications in ADS](#)

Citation metrics – Total citations (referred): 534, H-index (referred): 15

- Refereed
- * Grisoni, Chiappini, Miglio, **(Casali incl.)**, et al., 2023, "K2 results for "young" α -rich stars in the Galaxy a", [arXiv:2312.07091](#).
 - * Brogaard, Arentoft, Miglio, **Casali**, et al., 2023, "Asteroseismic age estimate of the open cluster NGC 6866 using Kepler and Gaia", [A&A 679, A23](#).
 - * Anders, Gispert, Ratcliffe, **(Casali incl.)**, et al., 2023, "Spectroscopic age estimates for APOGEE red-giant stars: Precise spatial and kinematic trends with age in the Galactic disc", [A&A 678, A158](#).
 - * **Casali**, Grisoni, Miglio, et al., 2023, "Time evolution of Ce as traced by APOGEE using giant stars observed with the Kepler, TESS and K2 missions", [A&A 677, A60](#).
 - * Matteuzzi, Montalbán, Miglio, **(Casali incl.)**, et al., 2023, "Red horizontal branch stars: An asteroseismic perspective", [A&A 671, A53](#).
 - * Magrini, Viscasillas Vazquez, Spina, **(Casali incl.)**, et al., 2023, "The Gaia-ESO survey: mapping the shape and evolution of the radial abundance gradients with open clusters", [A&A 669, A119](#).
 - * Zhang, Lucatello, Bragaglia, **(Casali incl.)**, et al., 2022, "Stellar Population Astrophysics (SPA) with the TNG. α -elements, lithium, sodium and aluminum in 16 open clusters", [A&A, 667A, 103Z](#).
 - * Tailo, Corsaro, Miglio, **(Casali incl.)**, et al., 2022, "Asteroseismology of the multiple stellar populations in the Globular Cluster M4", [A&A, 662, L7](#).
 - * Magrini, Danielski, Bossini, **(Casali incl.)**, et al., 2022, "Ariel stellar characterisation: I – homogeneous stellar parameters of 187 FGK planet host stars Description and validation of the method", [A&A, 663, A161](#).
 - * Spina, Magrini, Sacco, **Casali**, et al., 2022, "The Gaia-ESO Survey: Chemical tagging in the thin disk. Open clusters blindly recovered in the elemental abundance space", [A&A, 668, 16](#).
 - * Viscasillas Vazquez, Magrini, **Casali**, et al., 2022, "The Gaia-ESO Survey: the age-chemical clock relations spatially resolved in the Galactic disc", [A&A, 660, A135](#).
 - * Magrini, Viscasillas Vazquez, **Casali**, et al., 2022, "The Abundance of S-Process Elements: Temporal and Spatial Trends from Open Cluster Observations", [Univ., 8\(2\), 64, Review](#).
 - * Baratella, D'Orazi, Sheminova, **(Casali incl.)**, et al., 2021, "The Gaia-ESO Survey: a new approach to chemically characterising young open clusters. II. Abundances of the neutron-capture elements Cu, Sr, Y, Zr, Ba, La, and Ce", [A&A, 653, A67](#).
 - * Alonso-Santiago, Frasca, Catanzaro, **(Casali incl.)**, et al., 2021, "Stellar Population Astrophysics (SPA) with the TNG Stock 2, a little-studied open cluster with an mSTO", [A&A, 656, A149](#).

- * Magrini, Smiljanic, Franciosini, **(Casali incl.)**, et al., 2021, "The Gaia-ESO survey: Lithium abundances in open cluster Red Clump stars", *A&A*, 655, A23.
- * Romano, Magrini, Randich, **Casali**, et al., 2021, "The Gaia-ESO Survey: Galactic evolution of lithium from iDR6", *A&A*, 653, A72.
- * Zhang, Lucatello, Bragaglia, **(Casali incl.)**, et al., 2021, "Stellar Population Astrophysics (SPA) with TNG Atmospheric parameters of members of 16 unstudied open clusters", *A&A*, 654, A77.
- * Magrini, Lagarde, Charbonnel, **(Casali incl.)**, et al., 2021, "The Gaia-ESO survey: Mixing processes in low-mass stars traced by lithium abundance in cluster and field stars", *A&A*, 651, A84.
- * Magrini, Vescovi, **Casali**, et al., 2021, "Magnetic-buoyancy-induced mixing in AGB Stars: a theoretical explanation of the non-universal [Y/Mg]-age relation", *A&A*, 646, L2.
- * Brucalassi, Tsantaki, Magrini, **(Casali incl.)**, et al., 2021, "Determination of stellar parameters for Ariel targets: a comparison analysis between different spectroscopic methods.", *Exp Astron*, 53, 511-532.
- * **Casali**, Magrini, Frasca et al., 2020, "Stellar population astrophysics (SPA) with the TNG. The old open clusters: Collinder 350, Gulliver 51, NGC 7044, Ruprecht 171", *A&A*, 643, A12.
- * **Casali**, Spina, Magrini, et al., 2020 "The Gaia-ESO survey: the non-universality of the age-chemical-clocks-metallicity relations in the Galactic disc", *A&A*, 639, A127.
- * Spina, Nordlander, Casey, **(Casali incl.)**, et al. 2020 "How Magnetic Activity Alters What We Learn from Stellar Spectra", *ApJ*, 895, 52S.
- * D'Orazi, Oliva, Bragaglia, **Casali**, et al., 2020, "Stellar population astrophysics (SPA) with the TNG. Revisiting the metallicity of Praesepe (M 44)", *A&A*, 633, A38.
- * Frasca, Alonso-Santiago, Catanzaro, **Casali**, et al., 2019, "Stellar population astrophysics (SPA) with the TNG. Characterization of the young open cluster ASCC 123", *A&A*, 632, A16.
- * **Casali**, Magrini, Tognelli et al., 2019, "The Gaia-ESO survey: Calibrating a relationship between age and the [C/N] abundance ratio with open clusters", *A&A*, 629, A62.
- * Magrini, Vincenzo, Randich, **Casali**, et al., 2018, "The Gaia-ESO Survey: The N/O abundance ratio in the Milky Way", *A&A*, 618, A102.
- Non-refereed * Tinetti, Eccleston, Haswell, **(Casali incl.)**, et al., 2021, "Ariel: Enabling planetary science across light-years", *Arxiv*.
- * Prisinzano, Magrini, Damiani, **Casali** et al., 2018, "Investigating the population of Galactic star formation regions and star clusters within a Wide-Fast-Deep Coverage of the Galactic Plane", White Paper of LSST, *ArXiv*.
- * Magrini, Randich, **Casali**, et al. , 2018, "Tracing the chemical evolution of nearby galaxies with star clusters", White Paper of MAVIS, *pdf*.

Highlights & Press Releases

- Highlights Casali et al. 2019, A&A, 629, A62 – [Nature](#), [Nature Physics](#), [A&A](#)
- Press releases Casali et al. 2019, A&A, 629, A62 – [Media INAF](#), [AstroPa INAF](#)
- Casali et al. 2020, A&A, 639, A127 – [ESO Blog](#), [Media INAF](#)
- Casali et al. 2020, A&A, 643, A12 – [TNG news](#)

Referring

Proposals

- * ID 33, Normal, 2018/19, LBT-PEPSI, 25h, Co-I
- * ID 0104.D-0617(A), Normal, P104, UT2-Kueyen, UVES, 50h, Co-I, [link](#).
- * ID 0105.D-0191(A), Normal, P105, UT2-Kueyen, UVES, 50h, Co-I, [link](#).
- * ID 0106.D-0537(A), Normal, P106, UT2-Kueyen, UVES, 50h, Co-I, [link](#).
- * ID 0109.D-0486(A), Normal, P109, UT2-Kueyen, UVES, 50h, PI, [link](#).
- * ID A45TAC_22, Normal, AOT45/2022A, TNG-HARPS, 36h, PI, [link](#).
- * ID P65-006, Normal, Period 65, NOT-FIES, 11h, Co-I, [link](#).
- * IID 110.247L, Normal, P110, UT2-Kueyen, UVES, 50h, PI
- * ID A47TAC_9, Normal, AOT47/2023A, TNG-HARPS, 23h, PI, [link](#).

Other

- * Organization of the Asterochronometry Seminars (online), which takes place every Monday.
- * Organization of the S.P.O.K. (Stars and Planets Oriented Koffee), the meeting of the stars and star formation group at the *INAF - Osservatorio Astrofisico di Arcetri*, which takes place every Friday.
- * Member of *GAM - Gruppo Astrofili Massesi*, an astronomy outreach association in my home-town (Massa Carrara, Italy).

Referees

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