Giacomo Cordoni

Personal Info

DOB 28 Oct 1994
Nationality Italian
Homepage www.gcordoni.com
Email giacomo.cordoni@unipd.it
Personal Email gcordoni94@gmail.com
Google Scholar Giacomo Cordoni
Publications ADS bibliography
ORCID Giacomo Cordoni

Academic experience

Oct 2021–Oct 2022 **Postdoctoral fellowship**, *University of Padova, Padova, Italy*.
Project: Multiple Stellar Populations in Star Clusters
Supervisor: Prof. Antonino P. Milone

Jul 2018–Sep 2018 **Summer fellowship**, *University of Padova, Padova, Italy*.
Project: Multiple Stellar Populations in Magellanic Cloud Clusters
Supervisor: Prof. Antonino P. Milone

Education and training

2018–2021 (13 Dec 2021) **Astronomy Ph.D.**, *University of Padova, Padova, Italy, final score: Honors*.
Ph.D. project: Multiple Stellar Populations in Star Clusters
Supervisor: Prof. Antonino P. Milone
https://www.research.unipd.it/handle/11577/3416212

2016–2018 (21 Jun 2018) **Astronomy Master degree**, *University of Padova, Padova, Italy, final score 110L/110*.
Final thesis: Multiple Stellar Populations in Magellanic Cloud Clusters: disentangling between age spread and rotation
Supervisor: Prof. Antonino P. Milone, Co-supervisor: Dr. Anna F. Marino
http://tesi.cab.unipd.it/61306/

2013–2016 (26 Sep 2016) **Physics Bachelor degree**, *University of Padova, Padova, Italy, final score 97/110*.
Final thesis: Giant planet formation with "pebbles" accretion
Supervisor: Prof. Francesco Marzari
https://thesis.unipd.it/handle/20.500.12608/28103

Prizes and awards

Jul 2022 **Honourable Mention Tacchini prize** for best Ph.D. thesis in Astrophysics - XVII Edition 2022
https://www.sait.it/node/697

Jul 2020 **Stefano Magini Award** for best Master thesis in Astrophysics https://www.arcetri.inaf.it/ricerca/premio-stefano-magini

Research in numbers

One year after the conclusion of my three-year PhD, here are my research achievements:

- h-index of **14**
- **25** refereed papers (author and co-author) in peer-review journals with almost 600 citations
- **5** first-author publications with more than 100 citations
- **5** conference proceedings
- **1** HST proposal as P.I.
- **3** HST/JWST proposal as co-I.

- **5** contributed talks and/or poster presentation at international conferences

Scientific experience

Teaching, mentoring and related

Present — Astronomy Bachelor/Master thesis **co-supervisor**.

Present — **Scientific referee** for the Astrophysical Journal

Oct 2021 – Jan 2023 — **Assistant professor**, Astronomy Lab. 1, University of Padova

Oct 2022 – Jan 2023 — **Assistant professor**, Physics 1, University of Bergamo

Oct 2018– Jun 2019 — Tutoring activity in Calculus 1, *University of Padova, Padova, IT*.

Jun 2018 — Tutoring activity for the ESTAGE project with the GALFOR group, *University of Padova, Padova, IT*. http://progetti.dfa.unipd.it/GALFOR/outreach.html

International collaborations

Oct 2019– Dec 2019 — Visiting Ph.D. student at the *Research School of Astronomy and Astrophysics, Australian National University, Canberra, AU*. **Collaboration with Prof. Gary S. Da Costa and Dr. David Yong in the team lead by Nobel laureate Brian P. Schmidt**

Jun 2019 — Visiting Ph.D. student at the *University of Indiana Bloomington, Bloomington, Indiana, US*. **Collaboration with Prof. Enrico Vesperini**

Feb 2019 — Visiting Ph.D. student at the *Max-Planck-Institut für Astronomie, Heidelberg, DE*. **Collaboration with Dr. Alessandra Mastrobuono-Battisti**

Conferences and workshops

12 - 23 Jul 2021 — International Summer School on the Interstellar Medium of Galaxies, from the Epoch of Reionization to the Milky Way. https://ismgalaxies2021.sciencesconf.org/

2 - 4 Mar 2021 — Cool Stars 20.5 - virtually cool. *Cambridge Workshops of Cool Stars, Stellar Systems and the Sun* **Contributed Talk.** http://coolstars20.cfa.harvard.edu/cs20half/index.html

31 Aug - 4 Sep 2020 — The Local Group: Assembly and Evolution, STScI, Baltimore, MD, US. **Contributed Talk.** https://www.stsci.edu/contents/events/stsci/2020/april/the-local-group-assembly-and-evolution

26 - 31 Jun 2019 — European Week of Astronomy and Space Science, Lyon, FR. **Contributed Talk.** https://eas.unige.ch//EWASS2019/

3 - 7 Jun 2019 — Summer School in Statistics for Astronomers XV, University of Pennsylvania Eberly College of Science, State College, US.

27 - 31 May 2019 — Star Clusters: from the Milky way to the Early Universe, IAU Symposium, Bologna, IT. **Poster**. http://iausymp351.oas.inaf.it/

8 Jun 2018 — International Conference of Young Astrophysicists and Astronomers 2018, Padova, IT. **Contributed Talk.**. https://indico.cern.ch/event/715567/

Observing proposals

Principal Investigator — **HST cycle 27**, GO 15495, *A two orbits proposal to solve the age spread dilemma in young Magellanic Clouds clusters* , **P.I. Cordoni, G.**

http://www.stsci.edu/hst/observing/program-information

Co-Investigator — **HST cycle 30**, GO 17075, *Characterization of internal chemical spread in outer halo globular clusters*, **P.I. Lagioia, E. P.**

http://www.stsci.edu/hst/observing/program-information

Co-Investigator — **HST cycle 28**, GO 16289, *Multiple stellar populations in Globular Clusters: exploring the low mass regime*, **P.I. Milone, A. P.**

http://www.stsci.edu/hst/observing/program-information

Co-Investigator **JWST cycle 1**, GO 2560, *Solving the globular clusters multiple population enigma through JWST*, **P.I. Marino, A. F.**

http://www.stsci.edu/hst/observing/program-information

Co-Investigator **ESO program**, *The Li puzzle and the role of AGB stars in NGC 2808*, **P.I. Carlos, M.**

Personal Skills

Digital competences

Programming skills: Python (expert), Supermongo (expert), C++ (beginner), R (beginner), Mathematica (beginner), Matlab (beginner)

Other competences

2022 IBM AI engineering Professional Certificate, Introduction to Computer Vision and Image Processing, *Coursera*

2022 AWS & Deep Learning AI, Practical Data Science specialization, *Coursera*

2021 IBM Data Science Professional certificate, *Coursera, 7/10 single courses*

2019 Summer School in Statistics for Astronomers, *Penn State University*

Languages

Italian (native speaker), English (profiecient user)

Communication skills

Team work: Over the course of the past four years, I have worked in a motivated and productive research team, where weekly meeting were held to exchange ideas and results. At the Research School of Astronomy & Astrophysics I joined a research group which counted more than 20 active members, both senior and PhD students. Collaboration among members was highly encouraged.

Public speaking: As listed above, I attended numerous scientific international conferences where I presented my work and results, with written and oral presentation. This improved and enhanced my communication skills.

Social skills: As I spent three months at the Australian National University, a multicultural environment, and I attended different international schools, I learned to interact and share ideas in a scientific stimulating and heterogeneous environments.

Summary of research

My main research field is Galactic Archaeology, with a specific eye on star clusters and Halo stars. My PhD research has been mainly focused on the study of multiple stellar populations in star clusters and on the dynamics of metal-poor stars in the Galactic Halo from Gaia data. I got my master's degree in Astronomy & Astrophysics in 2018 with a thesis that was awarded the Magini prize for the best thesis in Astrophysics in the 2018 academic year in Italy. My PhD thesis, titled "Galactic Archaeology. From star clusters to very metal-poor stars" received an honorable mention in the Tacchini Prize for the best PhD thesis in Italy. During my PhD I spent three months at the Research School of Astronomy & Astrophysics of the Australian National University, collaborating with Prof. Gary Da Costa and David Yong to investigate the orbital properties of very metal-poor stars. The three months-collaborations resulted in the publication of Cordoni et al. (2021).
One year after my three-year PhD, my research has resulted in 25 refereed papers in peer-reviewed international journals, including 5 first-author publications, for a total of almost 600 citations, and about 100 to my first-author articles. **My current h-index is 14**.

List of publications

First author refereed publications

27 **Cordoni et al.**, *in review to A&A*, *Photometric binaries physical parameters of 78 Galactic Open clusters*

26 **Cordoni et al. 2022**, *Nature Communications*, *NGC1818 unveils the origin of the extended Main-Sequence Turn-Off in young Magellanic Clouds clusters.*

https://ui.adsabs.harvard.edu/abs/2022NatCo..13.4325C/abstract

25 **Cordoni et al. 2021**, *MNRAS*, *Exploring the Galaxy's halo and very metal-weak thick disk with SkyMapper and Gaia DR2*

https://ui.adsabs.harvard.edu/abs/2021MNRAS.503.2539C/abstract

24 **Cordoni et al. 2020b**, *ApJ*, *Gaia and Hubble unveil the kinematics of stellar populations in the Type II globular clusters ω Centauri and M 22.*

https://ui.adsabs.harvard.edu/abs/2020ApJ...898..147C/abstract

23 **Cordoni et al. 2020a**, *ApJ*, *Three-Component Kinematics of Multiple Stellar Populations in Globular Clusters with Gaia and VLT*

https://ui.adsabs.harvard.edu/abs/2020ApJ...889...18C/abstract

22 **Cordoni et al. 2018**, *ApJ*, *Extended Main-sequence Turnoff as a Common Feature of Milky Way Open Clusters*

https://ui.adsabs.harvard.edu/abs/2018ApJ...869..139C/abstract

Coauthor refereed publications

21 Milone, Cordoni et al. *In review A&A*, *Hubble-Space Telescope survey of Magellanic Cloud star clusters.Photometry and astrometry of 113 clusters and early results*

20 Jang et al. 2022 *MNRAS, Chromosome maps of Globular Clusters from wide-field ground-based photometry*

https://academic.oup.com/mnras/advance-article-abstract/doi/10.1093/mnras/stac3086/6786286

19 Legnardi et al. 2022 *ApJ*, *Constraining the original composition of the gas forming first-generation stars in globular clusters*

https://ui.adsabs.harvard.edu/abs/2022MNRAS.tmp..839L/abstract

18 Dondoglio et al. 2022 *ApJ*, *Survey of Multiple Populations in Globular Clusters among Very-low-mass Stars*

https://ui.adsabs.harvard.edu/abs/2022ApJ...927..207D/abstract

17 Marino et al. 2021 *ApJ*, *Spectroscopy and photometry of the least-massive Type-II globular clusters: NGC1261 AND NGC6934*

https://ui.adsabs.harvard.edu/abs/2021ApJ...923...22M/abstract

16 Jang et al. 2021 *ApJ*, *Integrated photometry of multiple stellar populations in Globular Clusters*
https://ui.adsabs.harvard.edu/abs/2021ApJ...920..129J/abstract

15 Tailo et al. 2021 *ApJ*, *Mass-loss law for red giant stars in simple population globular clusters*
https://ui.adsabs.harvard.edu/abs/2021MNRAS.503..694T/abstract

14 Lagioia et al. 2021 *ApJ*, *Multiple stellar populations in Asymptotic Giant Branch stars of Galactic Globular Clusters*
https://ui.adsabs.harvard.edu/abs/2021ApJ...910....6L/abstract

13 Dondoglio et al. 2021 *ApJ*, *Multiple Stellar Populations along the Red Horizontal Branch and Red Clump of Globular Clusters*
https://ui.adsabs.harvard.edu/abs/2021ApJ...906...76D/abstract

12 Tailo et al. 2020 *MNRAS*, *Mass loss along the red giant branch in 46 Globular Clusters and their multiple populations*
https://ui.adsabs.harvard.edu/abs/2020MNRAS.498.5745T/abstract

11 Milone et al. 2020 *MNRAS*, *A chromosome map to unveil stellar populations with different magnesium abundances. The case of Omega Centauri*
https://ui.adsabs.harvard.edu/abs/2020MNRAS.497.3846M/abstract

10 Milone et al. 2020 *MNRAS*, *Multiple populations in globular clusters and their parent galaxies*
https://ui.adsabs.harvard.edu/abs/2020MNRAS.491..515M/abstract

9 Milone et al. 2020 *MNRAS*, *The Hubble Space Telescope UV Legacy Survey of Galactic Globular Clusters. - XXI. Binaries among multiple stellar populations*
https://ui.adsabs.harvard.edu/abs/2020MNRAS.492.5457M/abstract

8 Lagioia et al. 2019, *AJ*, *The Role of Cluster Mass in the Multiple Populations of Galactic and Extragalactic Globular Clusters*
https://ui.adsabs.harvard.edu/abs/2019AJ....158..202L/abstract

7 Marino et al. 2019, *ApJ*, *Chemical abundances along the 1G sequence of the chromosome maps: The Globular Cluster NGC 3201*
https://ui.adsabs.harvard.edu/abs/2019ApJ...887...91M/abstract

6 Marino et al. 2019, *MNRAS*, *The Hubble Space Telescope UV Legacy Survey of Galactic Globular Clusters. XVIII. A Chemical Tagging of the Multiple Stellar Populations along the chromosome maps*
https://ui.adsabs.harvard.edu/abs/2019MNRAS.487.3815M/abstract

5 Zennaro et al. 2019, *MNRAS*, *Four stellar populations and extreme helium variation in the massive outer-halo globular cluster NGC 2419*
https://ui.adsabs.harvard.edu/abs/2019MNRAS.487.3239Z/abstract

4 Tailo et al. 2019, *MNRAS*, *Is helium the key parameter in the extended color spread of the first generation stars in M3?*
https://ui.adsabs.harvard.edu/abs/2019MNRAS.486.5895T/abstract

3 Li et al. 2019, *ApJ*, *Extended main-sequence turnoffs in the double cluster h and χ Persei: The complex role of stellar rotation*
https://ui.adsabs.harvard.edu/abs/2019ApJ...876...65L/abstract

2 Tailo et al. 2019, *ApJ*, *Mass loss of different stellar populations in Globular Clusters: the case of M4*
https://ui.adsabs.harvard.edu/abs/2019ApJ...873..123T/abstract

1 Milone et al. 2018, *ApJ*, *The Hubble Space Telescope UV Legacy Survey of Galactic Globular Clusters. XVI. The helium abundance of multiple populations*
http://adsabs.harvard.edu/abs/2018ApJ...869..139C

Conference proceedings

5 **Cordoni et al. 2019**, IAU proceedings, *Kinematics of multiple stellar populations in globular clusters with Gaia*

https://ui.adsabs.harvard.edu/abs/2019arXiv190811692C/abstract

4 Lagioia et al. 2021, The 20.5th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, *Multiple Stellar Populations in AGB stars of Galactic Globular Clusters*

https://ui.adsabs.harvard.edu/abs/2021csss.confE.137L/abstract

3 Tailo et al. 2021, The 20.5th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, *Mass-loss from multiple populations: hint of a universal mass loss-law for Pop II stars?*

https://ui.adsabs.harvard.edu/abs/2021csss.confE.247M/abstract

2 Legnardi et al. 2019, The 20.5th Cambridge Workshop on Cool Stars, Stellar Systems, and the Sun, *Constraining the composition of pristine material through multiple populations in Globular Clusters*

https://ui.adsabs.harvard.edu/abs/2021csss.confE..61L/abstract

1 Lagioia et al. 2019, IAU proceedings, *Helium variations in Galactic and extragalactic Globular Clusters*

https://ui.adsabs.harvard.edu/abs/2019arXiv190811702L/abstract