Giacomo Mantovan

Curriculum Vitae

Università di Padova
Centro di Ateneo di Studi e Attività Spaziali "G. Colombo"
Via Venezia 15
IT-35131, Padova, Italy
✉ *giacomo.mantovan@unipd.it*
https://gmantovan.github.io/

Research Interests

My research cover several critical areas in the exoplanet field. I am an expert in validating candidate exoplanets identified with the transit method, which is a crucial step to identify genuine exoplanets and exclude false positives among the plethora of transiting candidates. My expertise extends to the confirmation and characterisation of single- and multi-planet systems, especially those younger than 1 Gyr.

EXOPLANETS
- Exoplanet Validation, Confirmation, Characterisation
- Architecture of exoplanets, Rossiter - McLaughlin effect
- Young planets, Multi-planet systems
- Exoplanet Atmospheres

OTHERS
- Astrostatistics

Professional Experience

2024

Post-doc in Astronomy, *Università degli Studi di Padova*, Padova, Italy.

Project title Astrometric search for companions of nearby star

Advisor Professor Giampaolo Piotto

Start date 15/11/2024 - ongoing

2024

Post-doc in Astronomy, *Università degli Studi di Padova*, Padova, Italy.

Project title Analysis of light curves of exoplanets from space missions (CHEOPS, TESS and PLATO)

Advisor Professor Giampaolo Piotto

Start - End date 01/01/2024 - 14/11/2024

Educational Background

2020 – 2024

PhD in Astronomy, *Università degli Studi di Padova*, Padova, Italy.

Thesis title Exoplanetary parameters of the youngest compact multi-planet system TOI-5398: a journey from validation to characterisation

Advisors Professor Giampaolo Piotto, Dr Marco Montalto

Defence date 05/04/2024

2018 – 2020

MSc in Astronomy, *Università degli Studi di Padova*, Padova, Italy.

Thesis title Validation of candidate exoplanets discovered by TESS

Advisors Professor Giampaolo Piotto, Dr Marco Montalto

Final grade Summa Cum Laude

2015 – 2018

BSc in Astronomy, *Alma Mater Studiorum - Università di Bologna*, Italy.

Thesis title Classification of galaxies: morphological, photometric and kinematic characteristics

Supervisor Professor Daniele Dallacasa

Final grade 102/110

Research group membership

ITALY Member of **GAPS** (Global Architecture of Planetary Systems) collaboration; Leader of WP 4400, Young Object WG, GFU large program, ArMS large program.

International Member of the **PLATO** (PLAnetary Transits and Oscillations of stars) Mission Consortium. Member of the PLATO Science Management (PSM); WP130 000, WP132000, WP131200; PSV WG.

International Member of the **TFOP** (TESS Follow-up Observing Program): member of the SG4 WG. Member of the TBDWG.

International Collaborator of the **CHEOPS GTO** program. Axis 1 WG; TS3 WG.

International Science Team member of the **HARPS-N Collaboration**.

Grants and awards

2024 **Special mention in the 2024 "Pietro Tacchini Prize", awarded to the best Ph.D. thesis in astrophysics in Italy**, Italy, SAIT.

2023 **Univ. Cal. Santa Cruz (UCSC) grant to attend the Other World Laboratory (OWL) Summer Program 2023**, USA, UCSC, euros 1800€.

2023 **Gini scholarship grant**, Padova, Fondazione Aldo Gini, euros 4600€, **renounced**.

2022 **COST grant (Exoplanets and astro-statistical analysis techniques Summer School)**, Geneva, euros 1300€.

2021 **Erasmus+ for Traineeship grant**, Padova, University of Padova, euros 2400€.

2020 – 2024 **PhD Scholarship**, Padova, University of Padova.

2018 **Maestro Elio Todeschi merit scholarship**, Rovereto, Cassa rurale, euros 300€.

Observing Experience and Proposals

Observing Experience

2024 **ESO 3.6m telescope – HARPS & NIRPS**, *2 nights (1st observer, DVM).*

2023 **Telescopio Nazionale Galileo (TNG) – HARPS-N**, *11 nights (1st observer), 7 nights (2nd observer).*

2021 – 2023 **Asiago telescope – Echelle**, *2 nights (2nd observer).*

2020–2024 **Asiago telescope – Afosc**, *2 nights (1st observer), 4 nights (2nd observer)*.

Observational Proposals

2025 **CHEOPS GTO call**, 104 CHEOPS orbits to perform a transit follow-up of a long-period giant planet, **PI**.

2025 **ESO P115 call**, 9.5hrs of HARPS and NIRPS to measure the 3D obliquity of two planets, through continuous RV monitoring, RM observations, **co-PI**.

2024 **ESO P114 call**, 4.3hrs of ESPRESSO to mesure the obliquity of an infant planet, continuous RV monitoring, RM observations, **PI**.

2024 **ESO P114 call**, 24.4hrs of HARPS radial velocity follow-up, **co-PI**.

2024–2025 **INAF AOT50 call**, 18.8hrs of HARPS-N radial velocity follow-up, **PI**.

2024–2025 **INAF AOT50 call**, 5.8hrs of HARPS-N and GIANO-B to measure the obliquity of an infant planet, continuous RV monitoring, RM observations, **PI**.

2024–2025 **ESO P113 call**, 9hrs of HARPS and NIRPS to measure the 3D obliquity of two planets, through continuous RV monitoring, RM observations, **PI**.

2024–2025 **INAF AOT49 call**, 19hrs of HARPS-N to measure the 3D obliquity of four planets, through continuous RV monitoring, RM observations, **PI**.

2023–2024 **INAF AOT48 call**, 18.2hrs of HARPS-N to measure the 3D obliquity of two planets, through continuous RV monitoring, RM observations, **PI**.

2023–2024 **INAF AOT48 call**, 17.5hrs of HARPS-N radial velocity follow-up, **PI**.

2023–2024 **INAF AOT46 call [DDT]**, 7.5hrs of HARPS-N to measure the 3D obliquity of a young planet, through continuous RV monitoring, RM observations, **PI**.

2023–2024 **ESO P111 call**, 28.5hrs of HARPS radial velocity follow-up, **PI**.

2022–2023 **INAF AOT46 call**, 10hrs of HARPS-N radial velocity follow-up, **PI**.

2022–2023 **INAF AOT46 call**, 60hrs of multi-band REM images, **PI**.

2022–2023 **CNTAC 2022B call**, 2 nights of Magellan/IMACS images, **co-PI**.
In charge of: scientific rationale, target selection, and technical description.

2021–2022 **INAF AOT44 call**, 60hrs of multi-band REM images, **PI**.

Commission of Trust

- **External reviewer** of proposals submitted to the **2025 Regular Fondecyt National Projects Competition**.
- **Proposal reviewer** of **TNG/REM** proposals for the Time Allocation Committee (2022, 2023, 2024, 2025).
- **Proposal reviewer** of **ESO** proposals for the Time Allocation Committee (2023, 2024).

Presentations at international meetings and seminars

Contributed Talks at international meetings

2024 **XXI Progress Meeting GAPS**, Milano (Italy).
Title Summary of AOT50 proposals and recent results from AOT48 and 49 (15 min)

2024 **EAS 2024**, Padova (Italy).
Title Characterisation of the young multi-planet system TOI-5398 (ePoster with Short Presentation)

2024 **XX Progress Meeting GAPS**, Padova (Italy).
Title Status of AOT48 and AOT49 Junior proposal (15 min)

2023 **XIX Progress Meeting GAPS**, Torino (Italy).
Title Analysis of the RM effect and atm. characterisation of TOI-5398 (10 min)
Title Unveiling the nature of TESS warm giants exoplanets amenable for atm. characterisation with JWST & Probing the orbital obliquity of tidally young planets through the RM effect (10 min)

2023 **OWL Summer Program 2023**, Santa Cruz, California (USA).
Title The GAPS programme at the TNG. TOI-5398, the youngest compact multi-planet system composed of an inner sub-Neptune and an outer warm Saturn (12min)

2023 **TOE III 2023**, Centro de Astrofisica (Porto, Portugal).
Title The GAPS programme at the TNG. TOI-5398, the youngest compact multi-planet system composed of an inner sub-Neptune and an outer warm Saturn (15min)

2023 **Telescopio Nazionale Galileo's talks**, Breña Baja (Spain).
Title Validation of TESS exoplanet candidates orbiting solar analogues in the all-sky PLATO input catalogue (30 min)

2022 **Scottish Exoplanet/BD Spring meeting**, St. Andrews (Scotland).
Title Validation of TESS candidates orbiting PLATO, Solar-analog stars (15min)

Posters

2024 **Exoplanet V**, Leiden (Nederlands).
Title Revealing the enigmatic compact multi-planet systems with giants

2022 **NAM 2022**, The University of Warwick (England).
Title Validation of TESS exoplanet candidates orbiting solar analogues in the all-sky PLATO input catalogue

2021 **TESS Science Conference II**, US (Online).
Title Validation of TESS candidates orbiting Solar-type stars

2021 **PLATO Mission Conference**, Online.
Title Validation of TESS exoplanet candidates orbiting Solar-analog stars

Seminars

2022 **Exoplanets and astrostatistical analysis techniques Summer School**, Geneva (Switzerland).

2021 **Scientific Communication in Astronomy School 2021**, Bertinoro, Italy.
TALK SPRITZ talk (5min). 1st prize for best observational proposal competition.

2021 **RED School 2021 "Astrobiology Introductory Course"**, France (Online).
TALK PhD project presentation (2min)

Studies and experiences abroad

2022

European Union Program, Erasmus + traineeship, University of St Andrews **StaCES** (Scotland), duration 6 months.
Research visiting period at the University of St. Andrews (Scotland) from 01/03/2022 to 31/08/2022, under the supervision of Professor Andrew Cameron, as part of the PhD in Astronomy (Unipd).

Teaching Experience

Teaching Assistant

2024 – 2025

Astrophysics Laboratory 2, *Master degree in Astrophysics and Cosmology, Unipd*, Padova, Italy.
Supervisor Prof. Luca Malavolta; Duration: 24 hrs

2023 – 2024

Astrophysics Laboratory 2, *Master degree in Astrophysics and Cosmology, Unipd*, Padova, Italy.
Supervisor Prof. Luca Malavolta; Duration: 24 hrs

2022 – 2023

Astrophysics Laboratory 2, *Master degree in Astrophysics and Cosmology, Unipd*, Padova, Italy.
Supervisor Prof. Luca Malavolta; Duration: 24 hrs

Skills

Programming	**Python (Advanced)**, Fortran (Intermediate), Matlab (Intermediate), R (Foundation), HTML (Basic), Supermongo (Basic), LaTeX(Advanced), BASH (Basic)
Tools	GitHub, Jupyter-notebook, Jupyter-lab, Visual Studio Code
Softwares in data analysis	DS9, TOPCAT
Operating systems	Linux (Advanced), Microsoft Windows (Highly Specialised)
Office Suite	LibreOffice (Advanced), Microsoft Office (Advanced)
Raste graphic editor	GIMP (Intermediate)

Languages

Italian	Native
English	C1 level

Certificates

English

Language assessment result (CEFR Level C1)
OLS language assessment, Erasmus+ (EU), 7 Mar 2022

Attendance certificate (Academic English for PhD, 30hrs)
University of Padova Language Centre (IT), 1 Jan 2022

Attendance certificate (Intermediate Level B2)
School of Science, University of Padova (IT), 31 Jan 2020

Outreach

2022

NameExoWorlds 2022, Museo civico di Rovereto, Italy.
Public, outreach talk on exoplanets (20 min)

2022 **NameExoWorlds 2022**, Liceo artistico Vittoria, Trento, Italy.
Outreach talk on exoplanets, to a fourth-year high-school class (40 min)

2022 **Notte dei Ricercatori - 2022**, Padova, Italy.

2021 **Notte dei Ricercatori - Veneto Night 2021**, Padova, Italy.

Publications

ADS See here for an interactive and most updated list of all publications
ORCID https://orcid.org/0000-0002-6871-6131
Google Scholar

Referred first-author

[1] **Mantovan, G.** et al. "The inflated, eccentric warm Jupiter TOI-4914 b orbiting a metal-poor star, and the hot Jupiters TOI-2714 b and TOI-2981 b". In: *A&A* 691, A67 (Nov. 2024), A67. DOI: 10.1051/0004-6361/202451841. arXiv: 2409.07520 [astro-ph.EP].

[2] **Mantovan, G.** et al. "Orbital obliquity of the young planet TOI-5398 b and the evolutionary history of the system". In: *A&A* 684, L17 (Apr. 2024), p. L17. DOI: 10.1051/0004-6361/202449769. arXiv: 2404.02969 [astro-ph.EP].

[3] **Mantovan, G.** et al. "The GAPS programme at TNG. XLIX. TOI-5398, the youngest compact multi-planet system composed of an inner sub-Neptune and an outer warm Saturn". In: *A&A* 682, A129 (Feb. 2024), A129. DOI: 10.1051/0004-6361/202347472. arXiv: 2310.16888 [astro-ph.EP].

[4] **Mantovan, G.** et al. "Validation of TESS exoplanet candidates orbiting solar analogues in the all-sky PLATO input catalogue". In: *MNRAS* 516.3 (Nov. 2022), pp. 4432–4447. DOI: 10.1093/mnras/stac2451. arXiv: 2208.12276 [astro-ph.EP].

Referred coauthor

[1] L. Naponiello et al. "The GAPS programme at TNG: LXIV. An inner eccentric sub-Neptune and an outer sub-Neptune-mass candidate around BD+00 444 (TOI-2443)". In: *A&A* 693, A7 (Jan. 2025), A7. DOI: 10.1051/0004-6361/202451859. arXiv: 2411.09417 [astro-ph.EP].

[2] D. Nardiello et al. "The GAPS Programme at TNG: LXV. Precise density measurement of TOI-1430 b, a young planet with an evaporating atmosphere". In: *A&A* 693, A32 (Jan. 2025), A32. DOI: 10.1051/0004-6361/202452236. arXiv: 2411.12795 [astro-ph.EP].

[3] M. C. D'Arpa et al. "The GAPS programme at TNG: LXIII. Photo-evaporating puzzle: Exploring the enigmatic nature of TOI-5398 b's atmospheric signal". In: *A&A* 692, A77 (Dec. 2024), A77. DOI: 10.1051/0004-6361/202451237.

[4] G. Piotto et al. "Architecture of TOI-561 planetary system". In: *MNRAS* 535.3 (Dec. 2024), pp. 2763–2774. DOI: 10.1093/mnras/stae2440. arXiv: 2410.18169 [astro-ph.EP].

[5] T. Zingales et al. "A joint effort to discover and characterize two resonant mini Neptunes around TOI-1803 with TESS, HARPS-N and CHEOPS". In: *arXiv e-prints*, arXiv:2412.05423 (Dec. 2024), arXiv:2412.05423. DOI: 10.48550/arXiv.2412.05423. arXiv: 2412.05423 [astro-ph.EP].

[6] M. C. D'Arpa et al. "The GAPS programme at TNG: LX. Atmospheric characterisation of KELT-9 b via single-line analysis: Detection of six H I Balmer lines, Na I, Ca I, Ca II, Fe I, Fe II, Mg I, Ti II, Sc II, and Cr II". In: *A&A* 690, A237 (Oct. 2024), A237. DOI: 10.1051/0004-6361/202449341. arXiv: 2409.01779 [astro-ph.EP].

[7] M. Damasso et al. "The GAPS Programme at TNG. LIX. A characterisation study of the ∼300 Myr old multi-planetary system orbiting the star BD+40 2790 (TOI-2076)". In: *A&A* 690, A235 (Oct. 2024), A235. DOI: 10.1051/0004-6361/202450366. arXiv: 2408.10629 [astro-ph.EP].

[8] S. Filomeno et al. "The GAPS Programme at TNG. LXI. Atmospheric parameters and elemental abundances of TESS young exoplanet host stars". In: *A&A* 690, A370 (Oct. 2024), A370. DOI: 10.1051/0004-6361/202450611. arXiv: 2409.00675 [astro-ph.SR].

[9] V. Nascimbeni et al. "The K2-24 planetary system revisited by CHEOPS". In: *A&A* 690, A349 (Oct. 2024), A349. DOI: 10.1051/0004-6361/202450852. arXiv: 2409.02995 [astro-ph.EP].

[10] M. Damasso et al. "TOI-837 b: Characterisation, formation, and evolutionary history of an infant warm Saturn-mass planet". In: *A&A* 688, A15 (Aug. 2024), A15. DOI: 10.1051/0004-6361/202450679. arXiv: 2406.08949 [astro-ph.EP].

[11] M. Montalto et al. "The GAPS programme at TNG. LVII. TOI-5076b: A warm sub-Neptune planet orbiting a thin-to-thick-disk transition star in a wide binary system". In: *A&A* 687, A226 (July 2024), A226. DOI: 10.1051/0004-6361/202349082. arXiv: 2405.18950 [astro-ph.EP].

[12] G. Guilluy et al. "The GAPS Programme at TNG. LIV. A He I survey of close-in giant planets hosted by M-K dwarf stars with GIANO-B". In: *A&A* 686, A83 (June 2024), A83. DOI: 10.1051/0004-6361/202348997. arXiv: 2403.00608 [astro-ph.EP].

[13] Heike Rauer et al. "The PLATO Mission". In: *arXiv e-prints*, arXiv:2406.05447 (June 2024), arXiv:2406.05447. DOI: 10.48550/arXiv.2406.05447. arXiv: 2406.05447 [astro-ph.IM].

[14] A. Ruggieri et al. "The GAPS Programme at TNG. LIII. New insights on the peculiar XO-2 system". In: *A&A* 684, A116 (Apr. 2024), A116. DOI: 10.1051/0004-6361/202348042. arXiv: 2401.17876 [astro-ph.EP].

[15] I. Carleo et al. "The GAPS programme at TNG. L. TOI-4515 b: An eccentric warm Jupiter orbiting a 1.2 Gyr-old G-star". In: *A&A* 682, A135 (Feb. 2024), A135. DOI: 10.1051/0004-6361/202348207. arXiv: 2311.11903 [astro-ph.EP].

[16] A. Sozzetti et al. "The GAPS Programme at TNG. XLVII. A conundrum resolved: HIP 66074b/Gaia-3b characterised as a massive giant planet on a quasi-face-on and extremely elongated orbit". In: *A&A* 677, L15 (Sept. 2023), p. L15. DOI: 10.1051/0004-6361/202347329.

[17] J. Maldonado et al. "The GAPS programme at TNG. XLIII. A massive brown dwarf orbiting the active M dwarf TOI-5375". In: *A&A* 674, A132 (June 2023), A132. DOI: 10.1051/0004-6361/202346096. arXiv: 2304.04477 [astro-ph.SR].

[18] F. Z. Majidi et al. "New members of the Lupus I cloud based on Gaia astrometry. Physical and accretion properties from X-shooter spectra". In: *A&A* 671, A46 (Mar. 2023), A46. DOI: 10.1051/0004-6361/202245261. arXiv: 2301.04463 [astro-ph.SR].

[19] M. Montalto et al. "TIC 257060897b: An inflated, low-density, hot-Jupiter transiting a rapidly evolving subgiant star". In: *MNRAS* 509.2 (Jan. 2022), pp. 2908–2919. DOI: 10.1093/mnras/stab2923. arXiv: 2110.00489 [astro-ph.EP].

[20] D. Nardiello et al. "A PSF-based Approach to TESS High quality data Of Stellar clusters (PATHOS) - IV. Candidate exoplanets around stars in open clusters: frequency and age-planetary radius distribution". In: *MNRAS* 505.3 (Aug. 2021), pp. 3767–3784. DOI: 10.1093/mnras/stab1497. arXiv: 2105.09952 [astro-ph.EP].