

Pietro Leonardi

Curriculum Vitae

Department of Physics and Astronomy 'G. Galilei'
Università degli Studi di Padova
Vicolo dell'Osservatorio 3, Padova, Italy
Up to date: 08 July 2026
✉ pietro.leonardi@unipd.it

Research interest

Exoplanet detection & characterization – Time series analysis – Transit timing variations — Extremely precise radial velocities — Ground- and space-based transit photometry — Secular Timing Variations

Research

- Feb. 2026 - **Postdoctoral fellowship**, *University of Padova*
Oct 2026 Analysis of CHEOPS Photometric Data and Dynamical Modeling of Exoplanetary Systems

Education

- Nov. 2022 - **PhD in Space Science and Technology**, *University of Trento & University of Padova*, **Graduated with Honors**
Feb. 2026 PhD Thesis: Characterization of exoplanetary systems through transit timing techniques and radial velocities: from secular perturbations to resonant chains.
Supervised by Prof. Giampaolo Piotto, Dr. Luca Borsato, and Dr. Valerio Nascimbeni.
Defense date: 23/02/2026
- 2019 - 2021 **Master's degree in Astrophysics and Cosmology**, *University of Padova*, Padova
2016 - 2019 **Bachelor's degree in Astronomy**, *University of Bologna*, Bologna

Visiting Periods

- Feb. - Oct. 2024 **Space Research Institute - Institut für Weltraumforschung (IWF)**, *Graz, Austria*,
Research visiting period at the Space Research institute (Austrian Academy of Sciences, ÖAW), under the supervision of Dr. Luca Fossati

Memberships

- PLATO Mission Consortium (PMC)
- CHEOPS Science Team Collaborator - Sponsor Dr. Luca Borsato
- GAPS (Global Architecture of Planetary Systems) Collaboration
- TESS Follow-up Observing Program (TFOP)

Awarded Observing Proposals (*) MARKS PI and (**) LEAD CO-I

HARPS-N@TNG:

- (*) Confirming and exploring the potential of a long period Sub-Neptune ideal for atmospheric studies (**10 hrs** $\simeq$ 1.2 Nights) [INAF-AOT51]
- (*) A HARPS-N Deep Dive into a Cool Sub-Neptune orbiting a bright K Dwarf (**14.6 hrs** $\simeq$ 1.8 Nights) [INAF-AOT52]
- (*) Decoding a Radius Cliff Sub-Neptune: Mass, TTVs, and Atmospheric Follow-up Potential of TOI-5803 b (**10 hrs** $\simeq$ 1.3 Nights) [INAF-AOT53]

CHEOPS GTO Programme

- (*) Orbital Waltz: Looking for Precession in eccentric hot Jupiters. (**190 Orbits**, PR150089)

CHEOPS Guest Observers Programmes

- (*) Transit timing variations of V1298 Tau b: a step forward to decipher the elusive architecture of the infant multi-planet system V1298 Tau. (**60 orbits**, GO 0033)
- (*) Lost and Found: Constraining the radius and mass of a progenitor of sub-Neptunes. (**36 Orbits**, DP 0029)
- (**) Investigating the giant TTVs around a Solar-type star (**17 Orbits**, DP 0030)
- (*) Probing the Youngest Transiting Exoplanet's Atmosphere: Investigation TOI-6963 b by combining spectroscopy and photometry (**34 Orbits**, DP 0031)

TTT Observing Time

- (*) Tracking Resonant Dynamics in the Young Multi-Planet System TOI-6109 (21 hours at 2-m TTT telescope)

REM

- (*) The search for orbital decay around three TESS hot Jupiters (**100hrs** at REM telescope)

NEOSSat Science Guest Observation (GO) Program Cycle 7

- (**) Uncovering the true period of the enigmatic V1298Tau e (11 days)

First-Author publications

3. *Observing a 542-day transiting giant with large TTVs: The 2025 transit of HIP 41378 f and new constraints on the outer system* **P., Leonardi**, Alexandre Santerne, Luca Borsato, Salomé Grouffal, et al. *Astronomy & Astrophysics*, In press. DOI: 10.1051/0004-6361/202660305
2. *Transit Timing Variations in HIP 41378: CHEOPS and TESS confirm a non-transiting sixth planet in the system* **P. Leonardi**, L. Borsato et al., 2025, *Astronomy & Astrophysics*, 702, A211. DOI: 10.1051/0004-6361/202555253
1. *TASTE V. A new ground-based investigation of orbital decay in the ultra-hot Jupiter WASP-12b* **P. Leonardi**, V. Nascimbeni, V. Granata, L. Malavolta, L. Borsato, K. Biazzo, A. F. Lanza, S. Desidera, G. Piotto, D. Nardiello, M. Damasso, A. Cunial and L. G. Bedin, 2024, *Astronomy & Astrophysics*, 686 (A84). DOI: 10.1051/0004-6361/202348363

Main Co-author publications

- *A 34.6-day transiting sub-Neptune in the TOI-1422 planetary system* L. Naponiello, **P. Leonardi**, M. Damasso et al., 2025, *Monthly Notices of the Royal Astronomical Society*, 545, 2
- *The multi-planet system TOI-5624: four transiting sub-Neptunes with an outer companion revealed by transit-timing variations* A. Bonfanti, D. Gandolfi, **P. Leonardi** et al., submitted to *Astronomy & Astrophysics*.
- *The K2-24 planetary system revisited by CHEOPS* V. Nascimbeni, L. Borsato, **P. Leonardi** et al. 2024, *Astronomy & Astrophysics* 690, A349

Talks & Posters

Invited Seminars & Colloquia

◦ INAF-OATo, Torino (2025-April)

Title: Characterization of exoplanetary systems through transit timing techniques: from secular perturbations to mass measurements

Conference Talks

◦ Exoplanets 6

Title: Observing and modeling the orbit of a 542-Day transiting giant with large Transit Timing Variations

◦ PLATO-ESP2025: Planets throughout the habitable zone

Title: Probing the Six-Planet Architecture of HIP 41378 through TTVs with CHEOPS and TESS

◦ The Sixth Workshop on Extremely Precise Radial Velocities (EPRV 6)

Title: Navigating the V1298Tau Maze: Revising Planetary Masses and Orbital Architecture of an infant system

◦ Detection and Dynamics of Exoplanets (DDE) 2025

Title: Transit Timing Variations in HIP 41378: CHEOPS and TESS probe the architecture of a six-planet system

Conference Posters

◦ Exoplanet 6:

Title: Transit timing variations in HIP 41378: CHEOPS and TESS confirm a non-transiting sixth planet in the system

◦ ASES 4: Advanced School on Exoplanetary Science

Title: A new ground-based investigation of orbital decay in the Ultra hot Jupiter WASP-12b

◦ TOE III 2023, Centro de Astrofisica Univ. Porto (Porto, Portugal)

Title: A new ground-based investigation of orbital decay in the Ultra hot Jupiter WASP-12b

◦ Exoplanets in Italy: status and perspective

Title: V1298 Tau: Insights into the Orbital Architecture of a Young Planetary System

◦ European Astronomical Society Annual Meeting 2025

Title: Secular Timing Effects in Close-In Giants: Tides and planetary interiors

Teaching experience

Teaching assistant - Università degli studi di Padova

2023-2024 **Astrophysics Laboratory 2**, Master degree course in *Astrophysics and Cosmology*,
Lecturer Prof. Luca Malavolta

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Workshops & Other experiences

- **Sagan Exoplanet Summer Hybrid Workshop** on "Exoplanet Science in the Gaia Era"
- **OPR 2023 Proposal Writing School**
- **EANA 2024 Student LOC member**

Grants and awards

- **ESA Financial Support grant, euros 800€**
Conference 'PLATO ESP2025: Planets throughout the habitable zone', Marseille

Public Outreach

Night of the researchers (Notte dei ricercatori) - Science4All - Veneto Night 2022, Padova Italy
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