

# Pietro Leonardi

## Curriculum Vitae

Department of Physics and Astronomy 'G. Galilei'

Università degli Studi di Padova

Vicolo dell'Osservatorio 3, Padova, Italy

✉ [pietro.leonardi@unitn.it](mailto:pietro.leonardi@unitn.it) - [pietro.leonardi.1@studenti.unipd.it](mailto:pietro.leonardi.1@studenti.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*

May 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. **Space Research Institute - Institut für Weltraumforschung (IWF)**, *Graz, Austria*,

2024 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) [AOT51]
- (\*) A HARPS-N Deep Dive into a Cool Sub-Neptune orbiting a bright K Dwarf (14.6 hrs  $\simeq$  1.8 Nights) [AOT52]
- (\*) Decoding a Radius Cliff Sub-Neptune: Mass, TTVs, and Atmospheric Follow-up Potential of TOI-5803 b (10 hrs  $\simeq$  1.3 Nights) [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

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, <https://doi.org/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

### Co-author publications

9. *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
8. *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*.
7. *The K2-24 planetary system revisited by CHEOPS* V. Nascimbeni, L. Borsato, **P. Leonardi** et al. 2024, *Astronomy & Astrophysics* 690, A349
6. *A four-planet system orbiting the old thick disk star TOI-1203* D. Gandolfi et al. (inc. **P. Leonardi**), 2025, Accepted on *Astronomy & Astrophysics*
5. *Mass determination of the three long-period Neptune- and sub-Neptune-sized planets transiting TOI-282* A. Barone et al. (inc. **P. Leonardi**), 2025, *Astronomy & Astrophysics*, 704, A41
4. *A joint effort to discover and characterize two resonant mini Neptunes around TOI-1803 with TESS, HARPS-N and CHEOPS* T. Zingales et al. (inc. **P. Leonardi**), 2025, *Astronomy & Astrophysics* 695, A273
3. *Architecture of TOI-561 planetary system* G. Piotto et al. (inc. **P. Leonardi**), 2024, *Monthly Notices of the Royal Astronomical Society*, 535, 3
2. *Hints of a close outer companion to the ultra-hot Jupiter TOI-2109 b* J.-V. Harre et al. (inc. **P. Leonardi**), 2024, *Astronomy & Astrophysics*, 692, A254
1. *Characterizing a world within the hot-Neptune desert: Transit observations of LTT 9779 b with the Hubble space telescope/WFC3* Edwards et al. (inc. **P. Leonardi**), 2021, *The Astronomical Journal* 166 (4), 158

### 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 Astrofísica 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
- 2024-2025 **Astrophysics Laboratory 2**, *Master degree course in Astrophysics and Cosmology*,  
Lecturer Prof. Luca Malavolta

## 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
- Night of the researchers (Notte dei ricercatori) - Science4All - Veneto Night 2023**, Padova Italy