

Pietro Leonardi

Curriculum Vitae

Department of Physics and Astronomy 'G. Galilei'

Università degli Studi di Padova

Vicolo dell'Osservatorio 3, Padova, Italy

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Research interest

Exoplanet detection & characterization – Transit timing techniques — Extremely precise radial velocities — Ground- and space-based transit photometry — Tidal orbital decay – Apsidal Precession

Education

2022 - 2025 **PhD in Space Science and Technology**, University of Trento, Trento (TN)

2019 - 2021 **Master's degree in Astrophysics and Cosmology**, University of Padova, Padova (PD)

2016 - 2019 **Bachelor's degree in Astronomy**, University of Bologna, Bologna (BO)

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
- GAPS (Global Architecture of Planetary Systems) Collaboration
- TESS Follow-up Observing Program (TFOP)

First-Author publications

1. *TASTE V. A new ground-based investigation of orbital decay in the ultra-hot Jupiter WASP-12b* **Leonardi, P.**, 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, A&A, 686 (A84). doi: 10.1051/0004-6361/202348363
2. *Transit Timing Variations in HIP 41378: CHEOPS and TESS confirm a non-transiting sixth planet in the system* **Leonardi, P.**, submitted to A&A

Co-author publications

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. **Leonardi**), 2021, The Astronomical Journal 166 (4), 158
2. *The K2-24 planetary system revisited by CHEOPS*. V. Nascimbeni, L. Borsato, **Leonardi, P** et al. 2024, Astronomy & Astrophysics 690, A349
3. *Architecture of TOI-561 planetary system*. G Piotto et al. (inc. **Leonardi, P.**), 2024, Monthly Notices of the Royal Astronomical Society, 535, 3
4. *Hints of a close outer companion to the ultra-hot Jupiter TOI-2109 b* J.-V Harre et al. (inc. **Leonardi, P.**), 2024, Astronomy & Astrophysics, 692, A254
5. *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. **Leonardi, P.**), 2025, Astronomy & Astrophysics 695, A273

Talk & Poster

Seminars & Colloquia

- **INAF-OATo, Torino (2025-April)**

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

Conference Talks

- **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

- **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
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Lecturer Prof. Luca Malavolta

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

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)

HARPS-N/TNG: INAF AOT51 call

- (*) Confirming and exploring the potential of a long period Sub-Neptune ideal for atmospheric studies (10 hrs \simeq 1.2 Nights)

HARPS-N/TNG: INAF AOT52 call

- (*) A HARPS-N Deep Dive into a Cool Sub-Neptune orbiting a bright K Dwarf (14.6 hrs \simeq 1.8 Nights)

INAF AOT49 call

- (*) The search for orbital decay around three TESS hot Jupiters (**100hrs** of REM, 49-63)

NEOSSat Science Guest Observation (GO) Program Cycle 7

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

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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