ExoPlanet News
An Electronic Newsletter

No. 202, 14 April 2026

Editors: L. Schlarmann, J. Davoult, H. Wang, & T.-E. Riesen
NCCR PlanetS, Gesellschaftsstrasse 6, CH-3012 Bern, Switzerland

exoplanetnews@nccr-planets.ch
https://nccr-planets.ch/exoplanetnews

Contents

1 Editorial

Welcome to Edition 202 of ExoPlanet News!

As usual, we bring you abstracts of scientific papers, job ads, conference announcements, and an overview of exoplanet-related articles on astro-ph. Thanks a lot to all of you who contributed to this issue of the newsletter!

For next month, we continue looking forward to your paper abstracts, job ads or meeting announcements. Also, special announcements are welcome. As always, we would also be happy to receive feedback concerning the newsletter. The LaTeX template (v2.0) for submitting contributions, as well as all previous editions of ExoPlanet News, can be found on the ExoPlanet News webpage (`https://nccr-planets.ch/exoplanetnews/`).

The next issue will appear on Tuesday, May 12th (with a submission deadline ending on Sunday, May 10th, 2026 CEST).

Leander Schlarmann
Jeanne Davoult
Haiyang Wang
Timm-Emanuel Riesen

2 Abstracts of refereed papers

Time-variable Scattered Light in Herbig Disks Observed with Subaru/SCExAO

C. Mullin[1], *M. Lucas* [2], *R. Dong*[3,1], *J. Hashimoto*[4,5], *H. Jiang*[6], *D. Johnstone*[7,1], *K. Lawson*[8,9,10], *S. Brittain*[11], *O. Guyon*[12,2,13,5], *T. Kudo*[12], *J. Lozi*[12], *J. Najita*[14], *H. Sun*[15,16], *M. Tamura*[5,17,18], *K. Wagner*[2]

[1] Department of Physics and Astronomy, University of Victoria, Victoria, BC, V8P 5C2, Canada
[2] Steward Observatory, Department of Astronomy, The University of Arizona, Tucson, AZ 85721, USA
[3] Kavli Institute for Astronomy and Astrophysics, Peking University, Beijing 100871, China
[4] Academia Sinica Institute of Astronomy & Astrophysics (ASIAA), 11F of Astronomy-Mathematics Building, AS/NTU, No.1, Sec. 4, Roosevelt Rd., Taipei 106319, R.O.C.
[5] Astrobiology Center, National Institutes of Natural Sciences, 2-21-1 Osawa, Mitaka, Tokyo 181-8588, Japan
[6] Max-Planck-Institut für Astronomie, Königstuhl 17, 69117 Heidelberg, Germany
[7] NRC Herzberg Astronomy and Astrophysics, 5071 West Saanich Rd, Victoria, BC V9E 2E7, Canada
[8] Center for Space Sciences and Technology, University of Maryland, Baltimore County, Baltimore, MD 21250, USA
[9] Astrophysics Science Division, NASA-GSFC, Greenbelt, MD 20771, USA
[10] Center for Research and Exploration in Space Science and Technology, NASA-GSFC, Greenbelt, MD 20771, USA
[11] Department of Physics and Astronomy, Clemson University, Clemson, SC 29634-0978, USA
[12] Subaru Telescope, National Astronomical Observatory of Japan, 650 North A‘ohōkū Place, Hilo, HI 96720, USA
[13] College of Optical Sciences, University of Arizona, Tucson, AZ 85721, USA
[14] NOIRLab, 950 North Cherry Avenue, Tucson, AZ 85719, USA
[15] Academy for Advanced Interdisciplinary Studies, Peking University, Beijing 100871, China
[16] College of Future Technology, Peking University, Beijing 100871, China
[17] National Astronomical Observatory of Japan, 2-21-2, Osawa, Mitaka, Tokyo 181-8588, Japan
[18] Department of Astronomy, Graduate School of Science, The University of Tokyo, 7-3-1, Hongo, Bunkyo-ku, Tokyo 113-0033, Japan

The Astronomical Journal, published (arXiv: 2602.20346v3)

Using the Subaru Coronagraphic Extreme Adaptive Optics (SCExAO) instrument, we present near-infrared K-band polarimetric imaging of nine Herbig stars selected from a volume-limited sample within 200 pc. We detect the disks around MWC 480, HD 163296, and HD 143006 for the first time with SCExAO, and compare these observations with previous VLT/SPHERE datasets to identify surface-brightness variability. In MWC 480, we resolve two azimuthal brightness dips near the disk minor axis and find evidence that one of them shifted between 2021 and 2022. In HD 163296, we identify an apparent linear azimuthal motion of a localized peak in polarized intensity along the outer ring over a 15-month baseline. The rapid motion of these features relative to the local Keplerian velocity suggests that the observed variability is driven by changing illumination rather than physical material motion. Due to uncertainties in the underlying scattering background, however, we cannot determine the precise physical origin of the variability. No significant disk variability is detected in HD 143006 over a 10-month baseline. We also report the first detection of a protoplanetary disk using the fast-PDI mode on SCExAO, illustrating both the promise and current limitations of this observing mode. Finally, we report non-detections toward HD 144432, HD 56895, PDS 76, HIP 80425, HD 148352, and HIP 81474. All non-detections with Meeus classifications belong to Group II systems and are likely self-shadowed. For these six systems, we measure the system-integrated polarization fraction and angle of linear polarization, providing quantitative constraints on their unresolved circumstellar environments.

Download/Website: `https://doi.org/10.3847/1538-3881/ae473d`

Contact: `camrynmullin@uvic.ca`

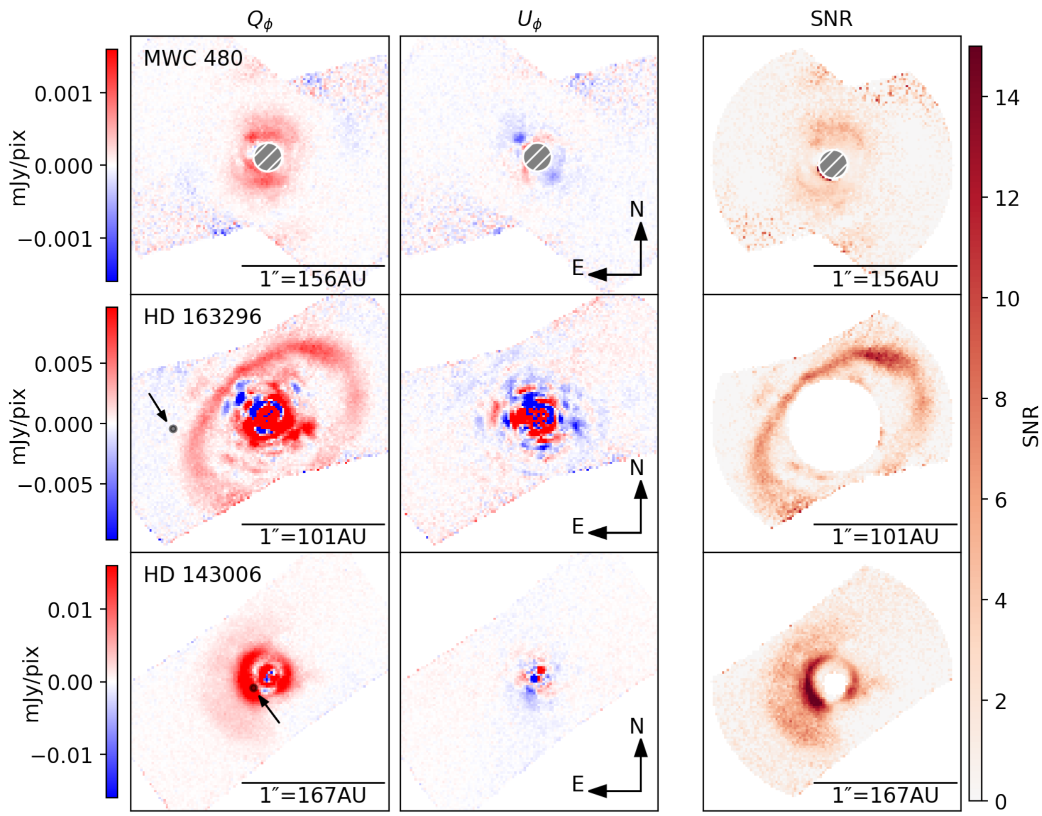


Figure 1: CHARIS PDI results showing Q_ϕ **(left)** and U_ϕ **(middle)** for the 3 previously-detected disks. The color bar is set such that red is positive and blue is negative. Each disk is detected as can be seen by the positive Q_ϕ and noise-like U_ϕ. The 0.1 arcsecond coronagraphic IWA for MWC 480 is marked by the hatched region. The black points (indicated with arrows) in the left column show the approximate location of the kinematically predicted planets from Pinte+20 assuming CCW rotation (same as the disk; Barenfeld+16, Teague+19) at Keplerian speed over a 5 year baseline. The right column shows radial SNR. Signal data was extracted from Q_ϕ and radial noise from U_ϕ. The central star is masked out and does not contribute to the calculation.

Constraining Small Planet Compositions for Future Missions

L. Palethorpe[1,2,3]*, A. Mortier*[4]*, J. A. Egger*[5,6,7]*, K. Rice*[1,2]*, T. G. Wilson*[8]*, A. Vanderburg*[9]*, A. S. Bonomo*[10]*, W. Boschin*[11]*, A. Collier Cameron*[12]*, Y. N. E. Eschen*[8]*, A. Harutyunyan*[11]*, L. Malavolta*[13,14]*, A. F. Martínez Fiorenzano*[11]*, A. Sozzetti*[10]*, M. Stalport*[15,16]*, V. Van Eylen*[17]*, C. A. Watson*[18]

[1] Institute for Astronomy, University of Edinburgh, Royal Observatory, Blackford Hill, Edinburgh, EH9 3HJ, UK
[2] Centre for Exoplanet Science, University of Edinburgh, Edinburgh, EH9 3HJ, UK
[3] HH Wills Physics Laboratory, University of Bristol, Tyndall Avenue, Bristol, BS8 1TL, UK
[4] School of Physics & Astronomy, University of Birmingham, Edgbaston, Birmingham, B15 2TT, UK
[5] Weltraumforschung und Planetologie, Physikalisches Institut, University of Bern, Gesellschaftsstrasse 6, 3012 Bern, Switzerland
[6] European Space Agency (ESA), European Space Research and Technology Centre (ESTEC), Keplerlaan 1, 2201 AZ Noordwijk, The Netherlands
[7] ESA research fellow
[8] Department of Physics, University of Warwick, Gibbet Hill Road, Coventry CV4 7AL, UK
[9] Center for Astrophysics | Harvard & Smithsonian, 60 Garden Street, Cambridge, MA 02138, USA
[10] INAF - Osservatorio Astrofisico di Torino, via Osservatorio 20, 10025 Pino Torinese, Italy
[11] Fundación G. Galilei - INAF (Telescopio Nazionale Galileo), Rambla José Ana Fernandez Pérez 7, E-38712 Breña Baja, Tenerife, Spain
[12] Centre for Exoplanet Science, SUPA School of Physics and Astronomy, University of St Andrews, North Haugh, St Andrews KY16 9SS, UK
[13] Dipartimento di Fisica e Astronomia "Galileo Galilei", Università degli Studi di Padova, Vicolo dell'Osservatorio 3, 35122, Padova, Italy
[14] INAF, Osservatorio Astronomico di Padova, Vicolo dell'Osservatorio 5, 35122, Padova, Italy
[15] Space Sciences, Technologies and Astrophysics Research (STAR) Institute, Université de Liège, Allée du 6 Août 19C, 4000 Liège, Belgium
[16] Astrobiology Research Unit, Université de Liège, Allée du 6 Août 19C, B-4000 Liège, Belgium
[17] Mullard Space Science Laboratory, University College London, Holmbury St Mary, Dorking, Surrey, RH5 6NT, UK
[18] Astrophysics Research Centre, School of Mathematics and Physics, Queen's University Belfast, Belfast, BT7 1NN, UK

Monthly Notices of the Royal Astronomical Society, published (arXiv:2603.14552)

Accurate mass and radius measurements of small transiting exoplanets are essential for probing their compositions, formation histories, and potential habitability. We present a uniform analysis of six planetary systems (each hosting at least one small transiting planet): K2-79, K2-106, K2-111, K2-222, K2-263, and TOI-1634. Our study combines new *CHEOPS* transit observations with archival photometry from *K2*, *TESS*, and ground-based facilities, alongside new and archival radial velocity data from HARPS-N, HIRES, ESPRESSO, and others. For each system, we perform joint transit and RV modelling, achieving typical precisions better than 15% and 5% for mass and radius, respectively, and thus enabling precise bulk density determinations. These reveal a range of compositions, including rocky planets near the radius valley (e.g. K2-106 b, TOI-1634 b), intermediate-density planets requiring steam-rich or mixed volatile envelopes (e.g. K2-111 b, K2-263 b), and low-density regimes, consistent with gas dwarfs or waterworlds (e.g. K2-79 b, K2-222 b). Several systems show evidence of additional companions detectable via RVs but not seen in transit. The results highlight the value of coordinated *CHEOPS* and HARPS-N observations in delivering some of the most precise bulk densities for small planets to date and support the preparation for future atmospheric characterisation missions.

Download/Website: `https://arxiv.org/abs/2603.14552`

Contact: `larissa.palethorpe@bristol.ac.uk`

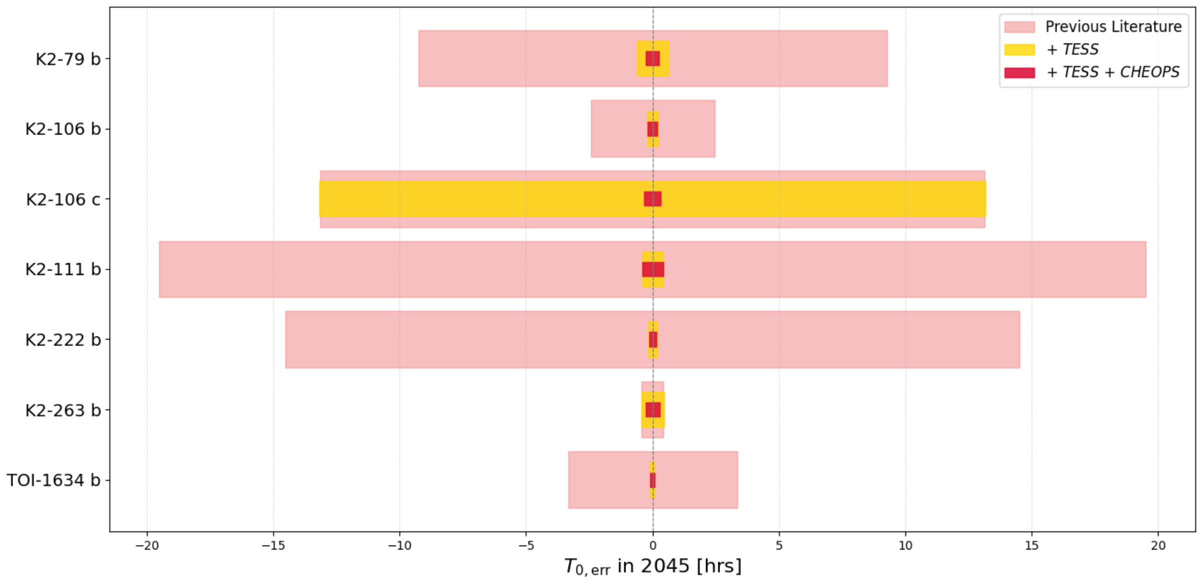


Figure 2: Projected absolute transit time uncertainties ($T_{0,\,err}$) at the 2045 epoch for the seven transiting planets analysed in this study. Each bar represents the 1σ timing window centred on the nominal transit mid-time. Light red bars correspond to the original transit ephemerides published in the literature, yellow bars show the improvement obtained after adding the *TESS* transits, and the dark red bars indicate the final precision after including *CHEOPS* observations.

Data reduction method for OPTICAM multiband time series of transiting exoplanets

S. Páez[1], *Y. Gómez Maqueo Chew*[1], *L. Hebb*[2]

[1] Universidad Nacional Autónoma de México, Instituto de Astronomía, AP 70-264, 04510. Ciudad de México, México.
[2] Department of Physics, Hobart and William Smith Colleges, Geneva, New York, 14456, USA

RAS Techniques and Instruments, published (2026RASTI...5ag021P)

We present a methodology for acquiring and reducing transiting exoplanet light curves obtained with the OPTICAM instrument in the Observatorio Astronómico Nacional en la Sierra de San Pedro Mártir (OAN-SPM). The OPTICAM sCMOS detectors generate significant warm pixels at exposures $\geq$10s, affecting both science and calibration frames. These warm pixels are not removed by standard dark subtraction because they vary unpredictably from frame to frame. We evaluate six pre-processing methods applied to science and calibration images using the transit of TOI-7149 b observed in $g'r'i'$. A median filter with a 3×3-pixel window minimizes the effect of warm pixels without affecting stellar signals. This median filter best reduces dispersion and red noise in the light curves when stellar peak counts are close to the dark current level. The improvement is less significant when the stellar peak is several thousand counts above the dark current level. We fit a multiband transit model to the light curves, measuring photometric precision, correlated noise, and retrieved planetary parameters. The transit model fitted to the light curves with pre-processing using a 3×3-median filter achieves the highest Bayesian evidence. Thus, it is our recommended method for correcting warm pixels. Finally, we present a reduction pipeline that combines Python modules (`PROFE`) and AstroImageJ to implement our proposed method for OAN-SPM 2.1m+OPTICAM transiting planet observations.

Download/Website: `https://doi.org/10.1093/rasti/rzag021`

Contact: `spaez@astro.unam.mx`

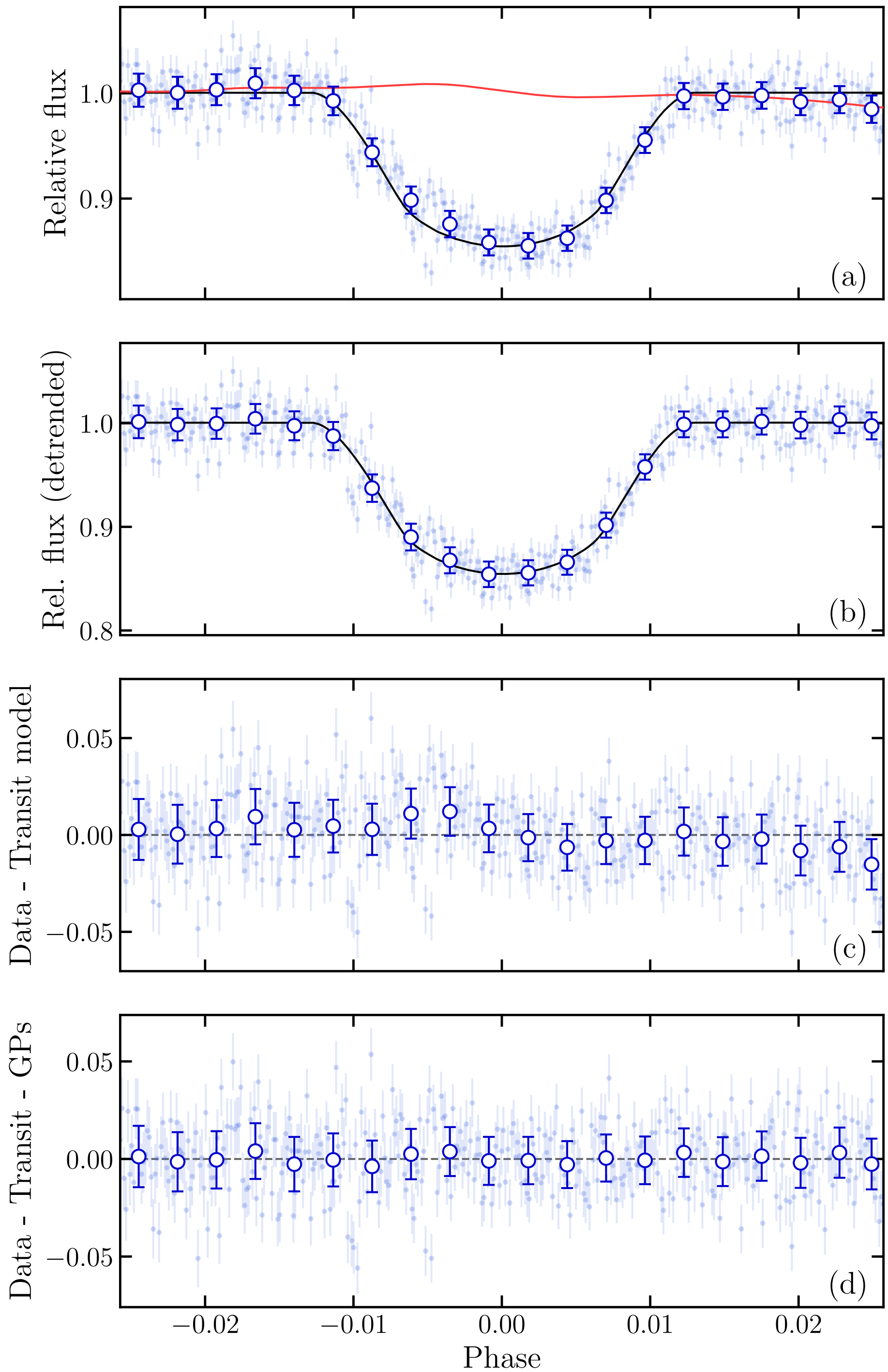


Figure 3: OPTICAM light curve in g′ of the transit light curve of TOI-7149 b with the proposed pre-processing. *(a):* Light curve resulting from the preprocessing with the median filter with window size of 3×3 pixels before standard reduction (light blue dots with error bars) with 10-min bins (large blue dots with error bars); the transit model is plotted as a black solid line and the detrending model as a red solid line. *(b):* Detrended light curve. *(c):* Residual between relative flux and transit model without detrending. *(d):* Residuals between relative flux and transit model with detrending. As the detrending corrects for baseline variability, including correlated noise, we used the residuals without the detrending to perform the time-averaging analysis and measure the amount of red noise in the light curves obtained from different reductions. The transit light curves in r′ and i′ bands show a similar behavior.

Long-term monitoring of WASP-19 b: Signs of apsidal precession and molecular signatures

A. R. Rajkumar[1,2], A. Bayo[2], P. Peng[3,4], J. Tregloan-Reed[5], J. Southworth[6], Tobias C. Hinse[7], L. G. Alegre[8,9], F. Amadio[10], M. Andersen[10], N. Bach-Møller[10], M. Basilicata[11], M. Bonavita[9], V. Bozza[12,13], M. J. Burgdorf[14], R. E. Cannon[9], G. Columba[12], M. Dominik[15], A. Donaldson[9], R. Figuera Jaimes[1,15,16,17], J. Fynbo[10], M. Hundertmark[18], U. G. Jørgensen[10], E. Khalouei[19], H. Korhonen[20,21], P. Longa-Peña[5], M. Rabus[22], S. Rahvar[22], H. Rendell-Bhatti[9], P. Rota[12], A. Rozek[9], S. Sajadian[23], J. Skottfelt[24], C. Snodgrass[9]

[1] Instituto de Astronomía y Ciencias Planetarias de Atacama (INCT), Universidad de Atacama, Copayapu 485, Copiapó, Chile
[2] European Southern Observatory, Karl-Schwarzschild-Strasse 2, 85748 Garching bei München, Germany
[3] Department of Physics, Washington University, St. Louis, MO 63130, USA
[4] School of Earth and Space Sciences, University of Science and Technology of China, Hefei 230026, China
[5] Centro de Astronomía (CITEVA), Universidad de Antofagasta, Avenida U. de Antofagasta, 02800, Antofa- gasta, Chile
[6] Astrophyscis Group, Keele University, Staffordshire ST5 5BG, UK
[7] University of Southern Denmark, Department of Physics, Chemistry and Pharmacy, SDU-Galaxy, Campusvej 55, 5230 Odense M, Denmark
[8] Centre for Astrophysics Research, Department of Physics, Astronomy and Mathematics, University of Hertfordshire, College Lane, Hatfield AL10 9AB, UK
[9] Institute for Astronomy, University of Edinburgh, Royal Observatory, Edinburgh EH9 3HJ, UK
[10] Centre for ExoLife Sciences, Niels Bohr Institute, Jagtvej 155, 2200 Copenhagen, Denmark
[11] INAF -– Osservatorio Astrofisico di Torino, Via Observatorio 20, 10025, Pino Torinese, Italy
[12] University of Bologna, Dipartimento di Fisica e Astronomia "Augusto Righi", Via Gobetti 93/2, 40129 Bologna, Italy
[13] Istituto Nazionale di Fisica Nucleare, Sezione di Napoli, Napoli, Italy
[14] Earth System Sciences, Atmospheric Science, University of Hamburg, Hamburg, Germany
[15] Centre for Exoplanet Science, SUPA, School of Physics & Astronomy, University of St Andrews, North Haugh, St Andrews KY16 9SS, UK
[16] Millennium Institute of Astrophysics MAS, Nuncio Monsenor Sotero Sanz 100, Of. 104, Providencia, Santiago, Chile
[17] Instituto de Astrofísica, Facultad de Física, Pontificia Universidad Católica de Chile, Av. Vicuña Mackenna 4860, 7820436, Macul, Santiago, Chile
[18] Astronomisches Rechen-Institut, Zentrum für Astronomie der Universität Heidelberg (ZAH), 69120 Hei- delberg, Germany
[19] Astronomy Research Center, Research Institute of Basic Sciences, Seoul National University, 1 Gwanak- ro, Gwanak-gu, Seoul, 08826, Korea
[20] Max-Planck-Institut für Astronomie, Königstuhl 17, 69117, Heidelberg, Germany
[21] European Southern Observatory (ESO), Alonso de Córdova 3107, Vitacura, Santiago, Chile
[22] Departamento de Matemática y Física Aplicadas, Facultad de Ingeniería, Universidad Católica de la Santísima Concepción, Alonso de Rivera 2850, Concepción, Chile
[23] Perimeter Institute for Theoretical Physics, 31 Caroline St N, Waterloo, ON N2L 2Y5, Canada
[24] Centre for Electronic Imaging, Department of Physical Sciences, The Open University, Milton Keynes, MK7 6AA, UK

Astronomy & Astrphysics, in press (arXiv:2603.12395)

Context: With over 6,000 exoplanets discovered to date, approximately 12 % are classified as hot-Jupiters. Due to their large sizes and short orbital periods ($P < 10\,\text{day}$), they are easier to detect and provide crucial insights into planetary formation, atmospheric properties, and orbital dynamics. Among these, ultra-short-period exoplanets ($P \leq 1\,\text{d}$) are particularly interesting, as they are expected to undergo orbital decay driven by strong tidal interactions. Despite theoretical predictions, WASP-12 b and WASP-4 b remain the confirmed hot-Jupiters experiencing measurable orbital decay.
Aims: This study presents a homogeneous analysis of WASP-19 b to investigate both its orbital dynamics and atmospheric composition. Leveraging a 15-year dataset, our goal is to assess whether the system exhibits long-term deviations from a constant orbital period and to investigate whether any detected variations are consistent with tidal orbital decay, apsidal precession, or periodic signals indicative of a potential planetary perturber. Additionally, we also construct a photometric transmission spectrum to characterize its atmosphere. Methods: We analyze multi-wavelength light curves, incorporating starspot modeling with `PRISM` to account for stellar inhomogeneities. To assess orbital evolution, we fit linear, quadratic, and cubic ephemeris models to transit timing residuals with respect to a non-decaying orbit.
Results: Our analysis, which includes 27 new transits, reveals no statistically significant periodic signal in the transit timings. Although none of the tested ephemeris models fully reproduce the observed timing scatter, the mid-transit times exhibit systematic deviations from a strictly constant orbital period and are best reproduced by

the cubic ephemeris in a relative model-comparison sense, indicating a slow, non-periodic long-term trend over the $\sim$15-year baseline. This behavior is more consistent with gradual orbital precession than with monotonic tidal decay, for which a dominant quadratic trend would be expected. Fitting a precession model yields a rate of $\dot{\omega}_{\mathrm{obs}} = (1.00 \pm 0.12) \times 10^{-4}\,\mathrm{rad/orbit}$, corresponding to a planetary Love number $k_{2p} = 0.107 \pm 0.08$, in agreement with recent independent estimates. The transmission spectrum reveals signatures of Na, K, and H_2O, with no strong evidence of TiO/VO, likely due to the resolution limits of the photometric data.
Conclusions: Our results support that apsidal precession could be the dominant process governing the long-term orbital evolution of WASP-19 b, possibly sustained by weak eccentricity forcing from the wide companion WASP-19 B. These orbital dynamics can, in turn, impact the atmospheric structure by modulating the irradiation history, potentially altering molecular abundances over time. Our findings highlight the importance of combining TTV analyzes with multi-wavelength atmospheric data, while emphasizing that additional high-quality timing and spectroscopic observations are required to corroborate the fidelity of the proposed orbital model.

Download/Website: `https://arxiv.org/abs/2603.12395`

Contact: anitha.raj.21@alumnos.uda.cl

3 Exoplanet Archives

January 2026 Updates at the NASA Exoplanet Archive

The NASA Exoplanet Archive team
Caltech/IPAC-NASA Exoplanet Science Institute, MC 100-22 Pasadena CA 91125

Pasadena CA USA, April 7, 2026

Note: Unless otherwise noted, all planetary and stellar data mentioned in the news are in the Planetary Systems Table, which provides a single location for all self-consistent planetary solutions, and its companion table the Planetary Systems Composite Parameters, which offers a more complete table of parameters combined from multiple references and calculations. Links to other tables and System Overview pages are embedded in the news text.

March 26, 2026

Three Jupiters Coming in Hot and Spectra of Frigid 14 Herculis c

We've added data for three new planets—–all hot Jupiters (orbiting M dwarfs!) discovered by NASA's TESS—–and new spectra for three planets that include 14 Herculis c (a.k.a. HD 145675 c), one of the coldest exoplanets imaged to date. Read the NASA release about 14 Her c and the discovery paper.

The new planets are TOI-5007 b, TOI-5292 A b, and TOI-5916 b. There are also new data for 11 planets: 14 Her c, K2-19 b, c, & d, Kepler-1624 b, TOI-1135 b, TOI-1685 b, TOI-3288 A b, TOI-4666 b, and WASP-107 b & c.

The other planets with new spectra in the Atmospheric Spectroscopy table are TOI-732 c (a.k.a. LTT 3780 c) and TOI-1685 b.

Note: Planets are listed in the archive's data tables by their default names, which sometimes differ from their more commonly known names. For example, 14 Herculis c appears as HD 145675 c in the Atmospheric Spectroscopy Table. The archive's news will include a planet's default name in parentheses when necessary.

To view a list of all aliases for a given object, mouse over the “identification card" icon on its System Overview page, as depicted in Figure 1.

March 19, 2026

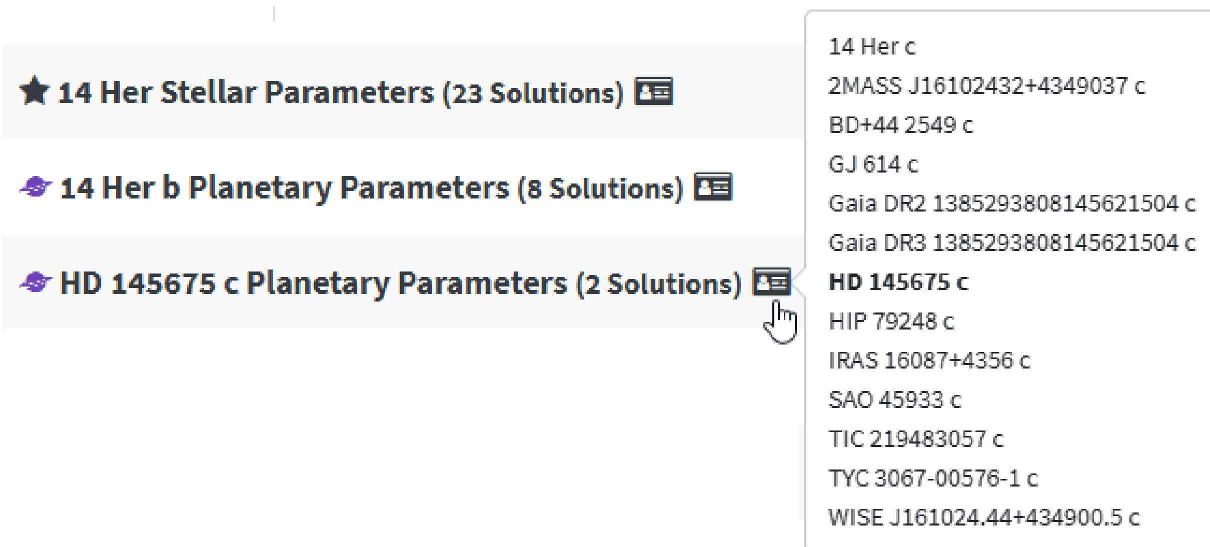
Say Yes to YSES-1 Spectra!

New data this week include spectra for two planets discovered in the YSES-1 system (a.k.a. TYC 8998-760-1) and data for three new planets, including super-Neptune TOI-3862 b located in the hot Neptune desert.

The other two new planets are TOI-1080 b and KMT-2016-BLG-1337L b. There are also new data for 2MASS J12073346-3932539 b, OGLE-2014-BLG-1760L b, PDS 70 b & c, and TOI-451 b, c, & d.

You can find this week's new spectra for YSES-1 b, YSES-1 c, and Delorme 1 AB b (a.k.a. 2MASS J01033563-5515561 AB b) in the Atmospheric Spectroscopy table. (**Pro Tip:** To access a pre-filtered Atmospheric Spectroscopy table for a specific target, click on the planet's Planetary Parameters section of its System Overview page and then the Atmospheric Spectroscopy link under Tools.)

Figure 4: To view a list of recognized aliases for an object in the NASA Exoplanet Archive, hover over the "identification card icon" on its System Overview page. As shown here for "14 Herculis c," bolded text represents the default name used in archive's data tables.



March 12, 2026

And Then There Were Nine

This week's update has data for nine new planets, and new data for 19 planets. The new planets bring our total confirmed planet count to **6,147**.

The new planets are HD 48265 c, HD 68475 b, HD 100508 b, HD 114386 c, KMT-2020-BLG-0202L b, KMT-2022-BLG-1551L b, KMT-2023-BLG-0466L b, KMT-2025-BLG-0121L b, and TOI-2094 b.

The planets with new data are GJ 1061 b, c, & d, HD 48265 b, HD 114386 b, HD 154345 b, HD 190360 b & c, HD 217107 b & c, K2-79 b, K2-222 b, L 98-59 b, c, d, e, & f, TOI-7166 b, and WD 1856+534 b.

March 5, 2026

Ten New Planets, Including Three in a Binary System

This week's update includes the TOI-2267 system, a compact binary system with three Earth-sized planets. The other new planets are DMPP-2 c & d, DMPP-6 b & c, DMPP-7 b, DMPP-8 b, and DMPP-9 b.
We also have new data for 18 planets: DMPP-1 b, c, & d, DMPP-2 b, DMPP-3 A b, HD 181433 b, c, & d, HD 39194 b, c, & d, HD 89839 b, AU Mic b & c, WASP-103 b, TOI-5734 b, GI 480 b, and HAT-P-7 b. There is also a new stellar companion, HAT-P-7 C.

Download/Website: `https://exoplanetarchive.ipac.caltech.edu`

Contact: `mharbut@caltech.edu`

4 Jobs and Positions

2 PhD positions in planetary science and machine learning

Prof. Yann ALIBERT
Space Research & Planetary Sciences and Center for Space and Habitability - Bern - Switzerland

Bern - Switzerland, September 2026

We seek qualified candidates for two 4-year PhD positions in exoplanet science in the research group of Prof. Yann Alibert (University of Bern), focusing on the internal structure, formation and architecture of planetary systems, in particular with the help of machine learning (ML) and artificial intelligence (AI) as developed in the AI4exoplanets group. The PhD positions will be part of TAPS (Theoretical Astrophysics and Planetary Science - Prof. Yann Alibert, Prof. Chistoph Mordasini, Dr. Martin Jutzi) at the Space Research & Planetary Sciences division of the Physics Institute of the University of Bern. Frequent interactions with the Centre for Space and Habitability (University of Bern) and Institutes part of SIPS (Swiss Institute for Planetary Sciences) are foreseen.

The ideal candidate will have a bachelor's and master's degree in physics, astrophysics, planetary science or equivalent. Experience with data analysis, ML and AI methods is an advantage. Candidates should be enthusiastic, persistent, communicative and willing to integrate into the teams in Bern and the Swiss landscape (TAPS, CSH and SIPS). The research will consist of a combination of numerical modelling of the physics of planetary system formation and development of ML and AI methods to analyse their results.

The scientific objectives of the two PhD projects are to study, in the framework of the CHEOPS mission and the future PLATO mission (launch in early 2027), the internal structure of planets and the architecture of planetary system. The work will be based on population synthesis models of planetary system formation developed in our group, as well as generative AI based formation models. Frequent interactions with members of the TAPS group and with the above-mentioned CHEOPS and PLATO consortia are foreseen.

The formal appointment will be for 4 years at the University of Bern. There will be a standard first year of probation. The annual salary is determined by a matrix provided by the Swiss National Fund. Child allowance and maternity/paternity leave are offered.The successful candidate will participate in group meetings, journal clubs, research discussions, attend seminars and colloquia, interact with research visitors, travel to conferences, etc., both in Bern and in SIPS. The starting date is expected to be September 2026 and is negotiable.

To apply, please send a letter of motivation including a personal statement (max. 1 page), a curriculum vitae (max. 2 pages), a list of publications (if applicable), undergraduate and graduate transcripts and a covering letter (1 page). The complete application should be sent as a single pdf file to Yann Alibert (yann.alibert@unibe.ch) with title "2 PhD positions in planetary science and machine learning". It is the applicant's responsibility to ensure that 1-2 letters of recommendation are also sent directly to Yann Alibert by the deadline of 15 June 2026. Interviews for short-listed candidates will take place online during the first half of July 2026.

The University of Bern is an equal opportunity employer and we particularly encourage applications from female researchers.

Download/Website: `https://www.ai4e.eu`

Download/Website: `http://nccr-planets.ch/`

Download/Website: `https://www.space.unibe.ch/`

Contact: `yann.alibert@unibe.ch`

5 As seen on astro-ph

The following list contains exoplanet related entries appearing on astro-ph in March 2026.
Disclaimer: The hyperlinks to the astro-ph articles are provided for the convenience of the reader, but the ExoPlanet News cannot be responsible for their accuracy and perpetuity.

March 2026

astro-ph/2603.00250: **^{12}CO Ro-vibrational Spectroscopy of AB Aurigae – A Potential Point Source is Present** *by Janus Kozdon et al.*
astro-ph/2603.00385: **TOI-1080 b: a temperate, rocky planet orbiting a quiet M4V host** *by Y. Gómez Maqueo Chew et al.*
astro-ph/2603.01313: **TESS Hunt for Young and Maturing Exoplanets (THYME) XIV: A Comoving-Based Age Constraint for KELT-20** *by Adam Distler et al.*
astro-ph/2603.02423: **Water enrichment of forming sub-Neptune envelopes limited by oxygen exhaustion** *by Tadahiro Kimura, Tim Lichtenberg*
astro-ph/2603.02395: **Disc Fragmentation. III. The need for a new paradigm for formation of planets within close binary systems** *by Luyao Zhang et al.*
astro-ph/2603.02309: **High Velocity Circumstellar Gas Orbiting a White Dwarf Star** *by B. Zuckerman et al.*
astro-ph/2603.02209: **Ground-based Atmospheric Characterization of Super-Earth L 98-59 d at High Spectral Resolution** *by Connor J. Cheverall et al.*
astro-ph/2603.01534: **The Intrinsic Multiplicity Distribution of Exoplanets Revealed from the Radial Velocity Method. II. Constraints on Giant Planet Multiplicity from Different Surveys** *by Jiayin Li, Wei Zhu*
astro-ph/2603.02065: **The ALMA Survey of Gas Evolution of PROtoplanetary Disks (AGE-PRO): Constraints on disk turbulence, fragmentation velocity, and inner pebble fluxes** *by Lilian Luo et al.*
astro-ph/2603.01796: **Quantification of Tides in Giant Planets from Observations** *by Valéry Lainey et al.*
astro-ph/2603.01703: **Planet-forming disks and their environment across regions and time from the full NIR census** *by Antonio Garufi et al.*
astro-ph/2603.02198: **Predicting Gaia astrometry's ability to constrain the populations of circumbinary planets** *by Thomas A. Baycroft et al.*
astro-ph/2603.02550: **An Adolescent and Near-Resonant Planetary System Near the End of Photoevaporation** *by Mu-Tian Wang et al.*
astro-ph/2603.03014: **Reproducing the stellar-mass dependence of the giant planet occurrence rate with pebble accretion models** *by Heather F Johnston et al.*
astro-ph/2603.03053: **Dynamics of the TWA 7 planetary system and possibility of an additional planet** *by A. Lacquement et al.*
astro-ph/2603.03077: **Nemesis: A Multi-Scale, Multi-Physics Algorithm for Astrophysics** *by Erwan Hochart, Simon Portegies Zwart*
astro-ph/2603.03422: **Benchmarking pre-main sequence stellar evolutionary tracks using disk-based dynamical stellar masses** *by Luigi Zallio et al.*
astro-ph/2603.03442: **Spiral formation caused by late infall onto protoplanetary disks** *by L. -A. Hühn et al.*
astro-ph/2603.03540: **The multi-wavelength vertical structure of the archetypal β Pictoris debris disk** *by Yinuo Han et al.*
astro-ph/2603.04558: **A Comparative Study of the Streaming Instability: Unstratified Models with Marginally Coupled Grains** *by Stanley A. Baronett et al.*
astro-ph/2603.04519: **NASA's *Pandora SmallSat Mission*: Simulating the Impact of Stellar Photospheric Heterogeneity and Its Correction** *by Benjamin V. Rackham et al.*
astro-ph/2603.04488: **NASA's Pandora SmallSat Mission: Simulated Modeling and Retrieval of Near-Infrared Exoplanet Transmission Spectra** *by Yoav Rotman et al.*

astro-ph/2603.03767: **The Effect of Planetary Rotation Period on Clouds in a Global Climate Model with a Bin Microphysics Scheme** *by Huanzhou Yang et al.*
astro-ph/2603.04322: **Hunting for methanol in the water rich, planet forming disk around HL Tau** *by Alessandro Soave et al.*
astro-ph/2603.03643: **Long-term activity cycles in planetary M stars observed with SOPHIE** *by C. G. Oviedo et al.*
astro-ph/2603.04919: **Long-period magnetic activity in the K dwarf GJ 1137 and a new super-Earth on a 9-day orbit** *by Denitza Stoeva et al.*
astro-ph/2603.05322: **Hydrodynamic outflows of proto-lunar disk volatiles** *by Kaveh Pahlevan et al.*
astro-ph/2603.05365: **Detection of C3 in Titan with VLT-ESPRESSO** *by Rafael Rianço-Silva et al.*
astro-ph/2603.05445: **TILARA: Template-Independent Line-by-line Algorithm for Radial velocity Analysis. I. Description of the code and application on a Sun-like star** *by C. San Nicolas Martinez et al.*
astro-ph/2603.05586: **The TESS All-Sky Rotation Survey: Periods for 944,056 Stars Within 500 pc** *by Andrew W. Boyle et al.*
astro-ph/2603.05599: **Vertical Structure of Protoplanetary Disks in Scattered Light: A large sample analysis** *by J. Byrne et al.*
astro-ph/2603.05600: **Exocomets of β Pictoris II: Two dynamical families of exocomets simulated with REBOUND** *by K. P. Jaworska, H. J. Hoeijmakers*
astro-ph/2603.06124: **Global Abiotic Sulfur Cycling on Earth-like Terrestrial Planets** *by Rafael Rianço-Silva et al.*
astro-ph/2603.06230: **Fundamental properties of protoplanetary discs determined from simultaneous fits to thermal dust images and spectral energy distributions** *by Tim J. Harries*
astro-ph/2603.06911: **Isotopic Evidence for a Cold and Distant Origin of the Interstellar Object 3I/ATLAS** *by Martin Cordiner et al.*
astro-ph/2603.07376: **Forecasting Catastrophe: Constraints on the Fomalhaut Main Belt Planetesimal Population from Observed Collisional Remnants** *by Arin M. Avsar et al.*
astro-ph/2603.07026: **A Direct View of the Chemical Properties of Water from Another Planetary System: Water D/H in 3I/ATLAS** *by Luis E. Salazar Manzano et al.*
astro-ph/2603.06992: **Multi-wavelength ALMA Imaging of HD 34282: Dust-trapping Signatures of a Vortex Candidate** *by Xiaoyi Ma et al.*
astro-ph/2603.07187: **High nitrogen and carbon isotopic ratios in the interstellar comet 3I/ATLAS** *by C. Opitom et al.*
astro-ph/2603.07711: **Dust distribution in circumstellar disks harboring multi-planet systems. II. Superthermal mass planets** *by V. Roatti et al.*
astro-ph/2603.08151: **One Hundred Years of Venus Polarimetry: PICSARR Observations of the Phase Curves** *by Jeremy Bailey et al.*
astro-ph/2603.08172: **Hydrocarbon complexity and photochemical shielding of prebiotic feedstock molecules in exoplanet atmospheres** *by Marrick Braam et al.*
astro-ph/2603.08314: **A reaction-diffusion model for describing the ring/gap structure in disks surrounding individual young stars** *by Enrique Lopez-Cabarcos*
astro-ph/2603.08529: **Gas chemistry in the dust depleted inner regions of protoplanetary disks. I. Near-IR spectra and overtones** *by J. Bethlehem et al.*
astro-ph/2603.08780: **A second visit to Eps Ind Ab with JWST: new photometry confirms ammonia and suggests thick clouds in the exoplanet atmosphere of the closest super-Jupiter** *by Elisabeth C. Matthews et al.*
astro-ph/2603.08787: **Worlds Next Door. IV. Mapping the Late Stages of Giant Planet Evolution with a Precise Dynamical Mass and Luminosity for ϵ Ind Ab** *by Aniket Sanghi et al.*
astro-ph/2603.09260: **Atmospheric Collapse and Habitability on Tidally-Locked Exoplanets** *by Keigo Taniguchi et al.*

astro-ph/2603.10076: **A test of the Dedalus software for exoplanet atmospheric dynamics** *by Rick Bonhof et al.*
astro-ph/2603.09321: **The Key to Unlocking Exoplanet Biosignatures: a UK-led IR Spectrograph for the Habitable Worlds Observatory Coronagraph** *by Beth Biller et al.*
astro-ph/2603.09351: **From planetesimals to planets with N-body simulations in the giant-planet formation region** *by Sebastian Lorek, Michiel Lambrechts*
astro-ph/2603.11202: **Cold giant discoveries from a joint radial-velocity and astrometry framework** *by Pablo A. Peña et al.*
astro-ph/2603.11151: **AREPAS: A Resource for Exploring Protostellar Accretion Systems - Data Release I** *by Marbely Micolta et al.*
astro-ph/2603.11017: **Oxygenated False Positive Biosignatures in Mars-like Exoplanet Atmospheres** *by Margaret Turcotte Seavey et al.*
astro-ph/2603.11146: **Masses of Potentially Habitable Planets Characterized by the Habitable Worlds Observatory** *by Kaz Gary et al.*
astro-ph/2603.10481: **White Dwarfs with Infrared Excess from LAMOST Data Release 11** *by Keyi Wang et al.*
astro-ph/2603.11086: **Searching for Life-As-We-Don't-Know-It: Mission-relevant Application of Assembly Theory for Exoplanet Life Detection** *by Sara Walker et al.*
astro-ph/2603.10905: **TOI-4616 b: a benchmark Earth-sized planet transiting a nearby M4 dwarf** *by F. Zong Lang et al.*
astro-ph/2603.11561: **Atmospheric Escape Rates from Mars - If it Orbited an Old M-Dwarf Star** *by David A. Brain et al.*
astro-ph/2603.11994: **The Cold Debris Disk Surveys I. Host Star Properties** *by Scott J. Kenyon et al.*
astro-ph/2603.12395: **Long-term monitoring of WASP-19 b: Signs of apsidal precession and molecular signatures** *by A. R. Rajkumar et al.*
astro-ph/2603.12479: **Bridging the Gap: Using Brown Dwarfs to Examine Silicate Clouds in Giant Exoplanet Atmospheres** *by Emily Calamari et al.*
astro-ph/2603.12861: **exoALMA XXI: The Morphology and Dynamics of Vertical Flows** *by Myriam Benisty et al.*
astro-ph/2603.13015: **exoALMA XXII: A Two-dimensional Atlas of Deviations from Keplerian Disks** *by Misato Fukagawa et al.*
astro-ph/2603.13075: **Impact of stellar spots on the high-resolution transmission spectra of a giant planet around a Sun-like star** *by Jennifer P. Lucero et al.*
astro-ph/2603.13081: **exoALMA. XXIV. Formaldehyde Emission in Protoplanetary Disks of exoALMA Compared with Their Properties and Dynamical State** *by Felipe Alarcón et al.*
astro-ph/2603.13149: **exoALMA XXIII. Estimating Disk and Planet Properties from Dust Morphologies with DBNets2.0** *by Alessandro Ruzza et al.*
astro-ph/2603.13157: **exoALMA XX: Tomographic Detection of Embedded Planets in Protoplanetary Disks** *by Andres F. Izquierdo et al.*
astro-ph/2603.13167: **Connecting JWST Silicate Cloud Observations to Exoplanet Cloud Microphysics with Nimbus** *by Sven Kiefer et al.*
astro-ph/2603.13172: **Ortho-Para Chemistry of H2CO in the Protoplanetary Disk TW Hya** *by M. Gaillard et al.*
astro-ph/2603.13463: **Exploring the surface of HD 189733 via Doppler shadow analysis of planetary transits** *by E. C. Gonçalves et al.*
astro-ph/2603.13543: **The JWST Early Release Science Program for Direct Observations of Exoplanetary Systems. VIII. Molecular Mapping Performance with JWST/MIRI MRS: VHS 1256 b as a case study** *by Mathilde Mâlin et al.*
astro-ph/2603.13510: **Dust traps and gas kinematic signatures in a crescent structure of a planet-forming disk** *by Greta Guidi et al.*
astro-ph/2603.14059: **HAT-P-32 b: what can be deduced from transit observations in Hα and He I lines?** *by*

Shaikhislamov I. F. et al.
astro-ph/2603.14552: **Constraining Small Planet Compositions for Future Missions** *by Larissa Palethorpe et al.*
astro-ph/2603.14683: **The TOLIMAN mission: A low-cost space telescope for high precision narrow-angle astrometry** *by Peter Tuthill et al.*
astro-ph/2603.15499: **SIMTERFERE: An optical interferometry simulator for quantifying the coherent flux stability of VLTI/GRAVITY+. Reaching per mill stability: Application to exoplanet spectroscopy** *by J. R. Sauter et al.*
astro-ph/2603.15810: **Experimental evidence for granular shear-flow instability in the Epstein regime** *by Holly L. Capelo et al.*
astro-ph/2603.15955: **A chemical perspective on planet formation in reduced systems** *by Urja Zaveri et al.*
astro-ph/2603.16464: **GEMS JWST: A sub-Solar metallicity atmosphere for giant planet TOI-5293Ab orbiting a rapidly changing M-dwarf** *by Shubham Kanodia et al.*
astro-ph/2603.16579: **A Search for the Lost Comet P/2010 H2 (Vales)** *by Quanzhi Ye et al.*
astro-ph/2603.17195: **Planetesimal formation via the streaming instability persists under turbulence driven by magnetorotational instability** *by Linn E. J. Eriksson et al.*
astro-ph/2603.18206: **Proton Irradiation of Primitive Atmospheres of Young Exoplanets and early Earth: N_2O Greenhouse Warming and Prebiotic Synthesis** *by Kensei Kobayashi et al.*
astro-ph/2603.18163: **JWST Edge-on Disk Ice (JEDIce): Program overview and ice survey results** *by Jennifer B. Bergner et al.*
astro-ph/2603.18337: **Turbulence destroys thermal lobes around Mars-sized planetary embryos** *by R. O. Chametla et al.*
astro-ph/2603.17574: **Searching for Molecular Signatures in 14 Transiting Exoplanets with SPIRou** *by A. Masson et al.*
astro-ph/2603.17918: **PRODIGE – envelope to disk with NOEMA VIII. Sulfur oxides trace a shock caused by a streamer in the inner envelope of a protostar** *by María Teresa Valdivia-Mena et al.*
astro-ph/2603.18070: **Investigation of Venus' thermal history, crustal evolution, and core dynamics with a coupled interior-lithosphere-atmosphere model** *by Rodolfo Garcia et al.*
astro-ph/2603.18233: **TOI-4552 b: A new ultra-short period rocky world revealed by NIRPS and TESS** *by Avidaan Srivastava et al.*
astro-ph/2603.17561: **Mass Inventory of the Solar System Beyond the Sun: A Systematic Compilation with Uncertainty Budget** *by Mario Menichella*
astro-ph/2603.18437: **The influence of hypothetical exomoons on planetary thermal phase curves** *by Xinyi Song et al.*
astro-ph/2603.18769: **Atmospheric supply of HCN is not the rate limiting step for prebiotic chemistry across rocky exoplanets** *by Gergely Friss et al.*
astro-ph/2603.18923: **Organosulfur Chemistry on sub-Neptunes: Implications for hazes and biosignatures** *by Sean Jordan et al.*
astro-ph/2603.19346: **New Constraints on the Jovian Narrowband Radio Components from Juno/Waves Observations and 3D Geometrical Simulations** *by Boudouma Adam et al.*
astro-ph/2603.19129: **TOI-1333Ab is on a well-aligned orbit. An aligned hot Jupiter around an F-type star with a mutually inclined stellar companion** *by E. Knudstrup et al.*
astro-ph/2603.19402: **A Planetary Illusion's Funeral: Non-detection of a Gaia DR3 Exoplanet Candidate, and the Role of Intermediate-precision Radial Velocities in Gaia Exoplanet Follow-up** *by Alexander Venner et al.*
astro-ph/2603.19983: **The Arc in the DX Cha Circumbinary System: Evidence For a Retrograde Circumbinary Disk** *by Cheng Chen et al.*
astro-ph/2603.20033: **Retrieving the Red Edge on Earth-like Planets with Heterogeneous Clouds and Surfaces** *by Zachary Burr et al.*

astro-ph/2603.20377: **Radiating Bondi Flows II: Giant Planet Accretion Models** *by Avery Bailey et al.*
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astro-ph/2603.20515: **A New Method of Measuring Magnetic Field Strength in Highly Structured Protostellar Envelopes** *by Yisheng Tu et al.*
astro-ph/2603.21360: **Iron isotope anomalies and the origin of the Earth** *by Timo Hopp et al.*
astro-ph/2603.23557: **A Physical Classification of Exoplanet Thermal Environments: Stellar Irradiation versus Tidal Heating** *by Daniel Fadrique Barbero*
astro-ph/2603.22550: **Turning the knobs on dust evolution: Comparing codes, parameters and their effects on planet formation and disc observables** *by Linn E. J. Eriksson et al.*
astro-ph/2603.22491: **Ecological modelling of hycean worlds** *by Gregory J. Cooke et al.*
astro-ph/2603.22085: **Direct spectroscopic confirmation of the young embedded proto-planet WISPIT 2c** *by Chloe Lawlor et al.*
astro-ph/2603.21897: **Planetary Architectures of Kepler Compact Multis with Binary Star Companions** *by Kendall Sullivan, Gregory J. Gilbert*
astro-ph/2603.21581: **Insights into the Exoplanet Radius Valley from Host-Star Ages, Activity, Chemistry, and Birth Radius** *by Xunzhou Chen et al.*
astro-ph/2603.22426: **Planet-Planet Scattering Explains the Mass-Eccentricity Relation of Warm Jupiters** *by Jiayin Dong et al.*
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astro-ph/2603.23317: **Formation of spirals in early stage protoplanetary discs** *by Marc Van den Bossche, Oliver Gressel*
astro-ph/2603.24184: **Gas dynamics around dust asymmetries in turbulent disks** *by Lizxandra Flores-Rivera et al.*
astro-ph/2603.24485: **Exoplanet Search and Characterization with the Proposed POET Canadian Space Mission** *by S. Metchev et al.*
astro-ph/2603.24585: **Unlocking HST's Stellar Treasure Trove: Stellar Activity Minima for HAT-P-11 Offer Prime Windows for Transmission Spectroscopy** *by Prajwal Niraula et al.*
astro-ph/2603.24663: **Disentangling auroral, cloud and magnetic spot driven variability in three early L-dwarfs with HST/WFC3** *by C. O'Toole et al.*
astro-ph/2603.24682: **GJ 523b is a Massive, 170 Myr-old Mega-Earth, Likely on a Polar Orbit** *by Maxwell A. Kroft et al.*
astro-ph/2603.24710: **From dust to planets – II. Effects of wide binary companions and external photoevaporation on planetesimal and embryo formation** *by Gavin A. L. Coleman*
astro-ph/2603.24777: **Deep radiative zones affect the planetary cooling and internal structure: implications for exoplanet characterisation** *by Simon Müller, Ravit Helled*
astro-ph/2603.24779: **Resizing the giants: How modelling adiabatic interiors impacts predicted planetary radii** *by Simon Müller, Ravit Helled*
astro-ph/2603.24796: **SaNDi-SHoP: Searching for Satellites'N'Disks with a Star-Hopping Program I. Analysis of the close surroundings of DI companions** *by Cecilia Lazzoni et al.*
astro-ph/2603.24809: **On the importance of laboratory experiments for interpreting exoplanet observations** *by Maggie A. Thompson*
astro-ph/2603.25787: **TOI-7169 b: A Hot Jupiter Transiting a Metal-Poor Star** *by Joshua D. Simon et al.*
astro-ph/2603.24944: **Flare-driven habitability: Expanding life's potential around low-mass stars** *by Dong-Yang Gao et al.*
astro-ph/2603.25541: **The Circumbinary Disc of HD 34700A II. Analysis of a strong dust asymmetry** *by Daniele Fasano et al.*
astro-ph/2603.26204: **The role of inner disk edges in shaping ultra-short-period planet systems around late M**

dwarfs *by S. N. Brandenberger et al.*

astro-ph/2603.26474: **The atmosphere of K2-18 b: The role of hazes, clouds and photoelectrons** *by P. Lavvas et al.*

astro-ph/2603.26876: **Dust evolution during protoplanetary disk buildup enhances CO ice relative to water** *by Joanna Drazkowska*

astro-ph/2603.26953: **ASTER – Agentic Science Toolkit for Exoplanet Research** *by Emilie Panek et al.*

astro-ph/2603.27093: **Origins of Compact Mean-Motion Resonances: Evidence for Long-Range Migration and the Case of Kepler-36** *by Konstantin Batygin, Alessandro Morbidelli*

astro-ph/2603.27603: **Closeby Habitable Exoplanet Survey (CHES). V. Planetary Parameters Derived from Angular Separation Variations** *by Dongjie Tan et al.*

astro-ph/2603.29007: **Protoplanetary Disk Evolution in a Low-Metallicity Environment: JWST's First Mid-Infrared Census of Low-Mass Stars** *by Chikako Yasui et al.*

astro-ph/2603.28238: **Mass determination of the ultra-short-period planet LHS 3844 b. First K-band radial velocity measurements with CRIRES+** *by E. Nagel et al.*

astro-ph/2603.28850: **Gaia DR3 IDs for TESS Input Catalog Targets** *by Kevin K. Hardegree-Ullman et al.*

astro-ph/2603.28237: **Weighing the mass of LHS 3844 b** *by Alejandro Hacker et al.*

astro-ph/2603.28867: **Large Dust Grains and a Possible Dust Trap in the Polar Circumbinary Disc of HD 98800B** *by Álvaro Ribas et al.*

astro-ph/2603.29147: **Nonthermal Velocity Dispersion in the Outer Disk of HL Tau** *by Jinshi Sai et al.*

astro-ph/2603.29817: **Homogeneous stellar parameters for 717,807 TESS FGK stars using Gaia DR3** *by Francesca Waines et al.*