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1 Editorial

Welcome to Edition 207 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 L^AT_EX 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, October 13th (with a submission deadline ending on Sunday, October 11th, 2026 CEST).

Haiyang Wang
Leander Schlarman
Jeanne Davoult
Timm-Emanuel Riesen

2 Abstracts of refereed papers

Radial velocity detection of the TRAPPIST-1 planetary system with SPIRou and NIRPS

A. L’Heureux¹, R. Doyon^{1,2}, C. Cadieux^{1,3}, P. Petit⁴, O. Lim¹, É. Artigau¹, N. J. Cook¹, E. Agol⁵, X. Bonfils⁶, J. Morin⁷, S. Bellotti⁸, C. Moutou⁴, L. Moranta^{1,9}, J.-F. Donati⁴, L. Arnold¹⁰, X. Delfosse⁶, G. Hébrard¹¹, R. Allart¹, F. Bouchy³, L. Mignon^{3,6}, I. C. Leão¹², D. Mounzer³ *et al.* (a complete list of authors can be found on the publication)

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Astronomy & Astrophysics, in press (arXiv:2609.03006)

The TRAPPIST-1 system is well-known for its seven transiting Earth-sized exoplanets. It has been extensively studied and characterized, notably with transit timing variations (TTVs) to precisely measure the mass of the planets. Using near-infrared spectroscopic observations obtained as part of the SPIRou Legacy Survey and the NIRPS Guaranteed Time Observation programs, we aimed to verify those values through radial velocity (RV) measurements of the system. Our RV analysis reveals that the current data do not have the precision required to individually detect the TRAPPIST-1 planets. However, we confidently detect ($\Delta \ln \mathcal{Z} = 7.53$, 1860:1 odds) the combined RV signature of the planets by informing their relative masses on the TTV analysis, with TRAPPIST-1 b as a proxy of the whole system. For the first time, the RV signal of the TRAPPIST-1 system is recovered: we find a RV semi-amplitude of $K_b = 3.65^{+0.78}_{-0.83} \text{ m s}^{-1}$ corresponding to a planetary mass of $M_{p,b} = 1.31 \pm 0.29 M_\oplus$, demonstrating that the RV measurements are consistent with the TTV model ($M_{p,b;\text{TTV}} = 1.374 \pm 0.069 M_\oplus$). Additionally, the NIRPS RVs constrain the presence of giant planets beyond the snow line, excluding Saturn-mass planets out to 2.7-yr orbits and Neptune-mass objects out to 20 d. Through RV, we determined the stellar activity period to be of $3.22^{+0.22}_{-0.20} \text{ d}$. Its agreement with photometric measurements (*K2* and *TESS*) confirms stellar rotation as the origin of the ~ 3.3 -d periodicity observed for TRAPPIST-1. We further investigated stellar activity with SPIRou polarimetric measurements, placing an upper limit on the longitudinal field ($|B_l| < 40 \text{ G}$, 3σ). This limit is compatible with a weak multipolar large-scale magnetic geometry, as observed in some of the later-type rapidly rotating M dwarfs.

Download/Website: <https://arxiv.org/pdf/2609.03006>

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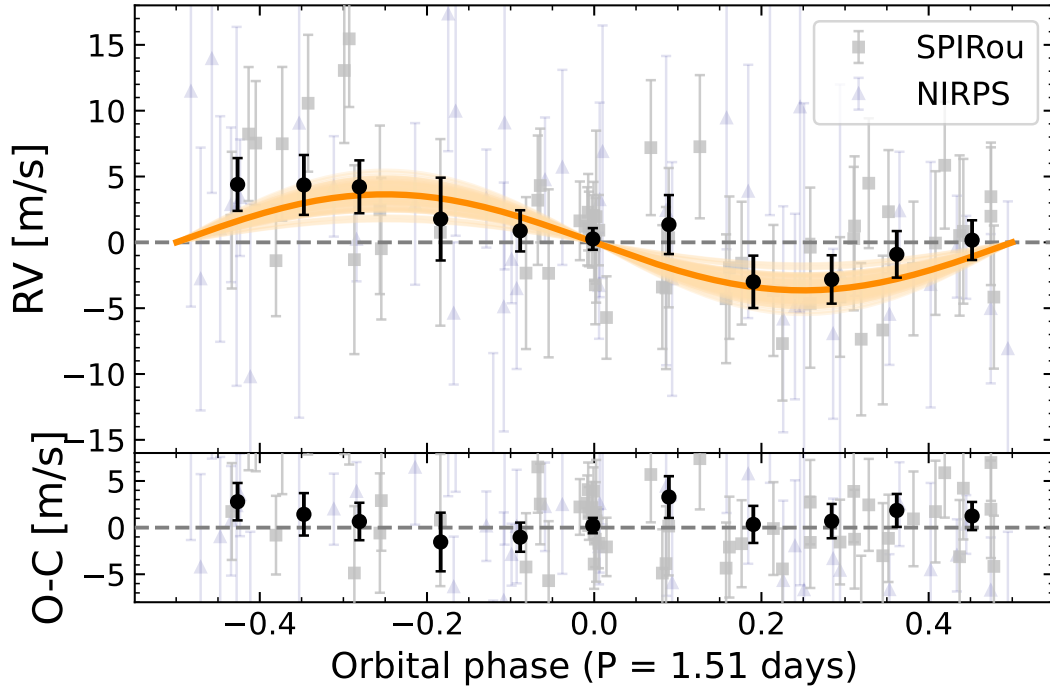


Figure 1: Radial velocity signal of TRAPPIST-1 b detected with SPIRou and NIRPS. The best-fit systematics, stellar activity and other planets' RV signatures are removed from the data to isolate the signal of TRAPPIST-1 b. The Keplerian shown in orange is computed with the best-fit value of K_b .

The Hot Neptune Initiative (HONEI) III. An ultra-hot super Neptune orbiting the metal-rich subgiant star TOI-5646: the largest host for a desert dweller

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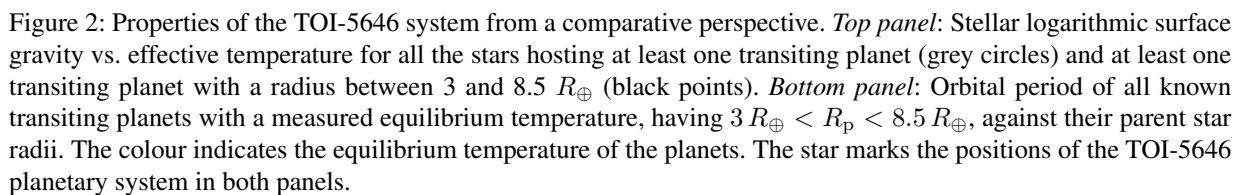
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Astronomy & Astrophysics, in press (arXiv:2608.24311)

We report the confirmation of the TESS transiting-planet candidate orbiting the metal-rich F8 IV-V subgiant star TOI-5646 ($V = 11.38$ mag; $T_{\text{eff}} = 6136 \pm 51$ K). The planetary nature of TOI-5646 b was confirmed by means of HARPS-N follow-up radial velocity measurements. We determined that the planet has an orbital period of 2.427702 ± 0.000025 days and an orbital eccentricity compatible with zero. With a mass of $45.9 \pm 4.4 M_{\oplus}$, a radius of $6.6 \pm 0.3 R_{\oplus}$, and an equilibrium temperature of 1935 ± 29 K, it is one of the hottest super-Neptune exoplanets ever discovered in the Neptune desert. Its density, $0.87 \pm 0.15 \text{ g cm}^{-3}$, is lower than that of most other desert dwellers, but still appears to follow the trend that the desert is populated by dense planets than those in the ridge and savanna. The metallicity of the parent star ($[\text{Fe}/\text{H}] = 0.32 \pm 0.06$) follows the trend whereby the host stars of Neptune-sized exoplanets in the desert and the ridge are generally richer in metal than those in the savanna. The $\log g$ of the parent star, 4.09 ± 0.08 , suggests that the host is an evolved star, making this a peculiar system: TOI-5646 is the largest star ($\sim 1.8 R_{\odot}$) ever discovered to host a Neptune-sized planet in the desert (Fig. 1). Internal structure modelling revealed that TOI-5646 b is highly enriched in metals, with an inferred bulk metallicity between 0.7 and 0.95. Atmospheric evolution simulations indicate that the planet has undergone significant mass loss (6 – 16%) through intense XUV irradiation from its host star. These results indicate a peculiar formation history (potentially involving early protoplanetary disk dispersal), a planetary collision, or a late tidal destruction event, to explain its current state as a low-density survivor in the Neptune desert.

Download/Website: <https://arxiv.org/abs/2608.24311>

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Volatile depletion in rocky planets as a chemical fingerprint of hybrid accretion

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Nature Astronomy, in press (arXiv:2608.24407)

Volatile depletion in rocky planets relative to their host stars is commonplace in both the Solar System and exoplanetary systems, yet the connections between planet formation and composition remain elusive. Here we model devolatilization during pebble accretion in combination with collisional growth from volatile-depleted planetesimals to explore the formation pathways of Earth and Mars. Using Bayesian inference, we find that bulk silicate Earth is best reproduced by $\gtrsim 75\%$ contribution from two protoplanets formed via pebble accretion, supplemented by up to $\sim 25\%$ material from planetesimals that are compositionally akin to the asteroid Vesta. Using instead a planetesimal volatile-depletion curve that is not observed among known meteorite parent bodies would allow the planetesimal contribution to reach $40^{+15}_{-14}\%$. In comparison, bulk silicate Mars reflects $27 \pm 5\%$ pebble-accreted material and $73 \pm 5\%$ Vesta-like planetesimals. We identify volatile depletion as a chemical fingerprint of hybrid accretion, in which both pebble accretion and collisional assembly contribute to terrestrial planet growth. By quantitatively linking formation pathways to volatile budgets, our findings demonstrate how planetary accretion histories can be inferred from elemental signatures, with broad implications for interpreting the chemical diversity of rocky exoplanets.

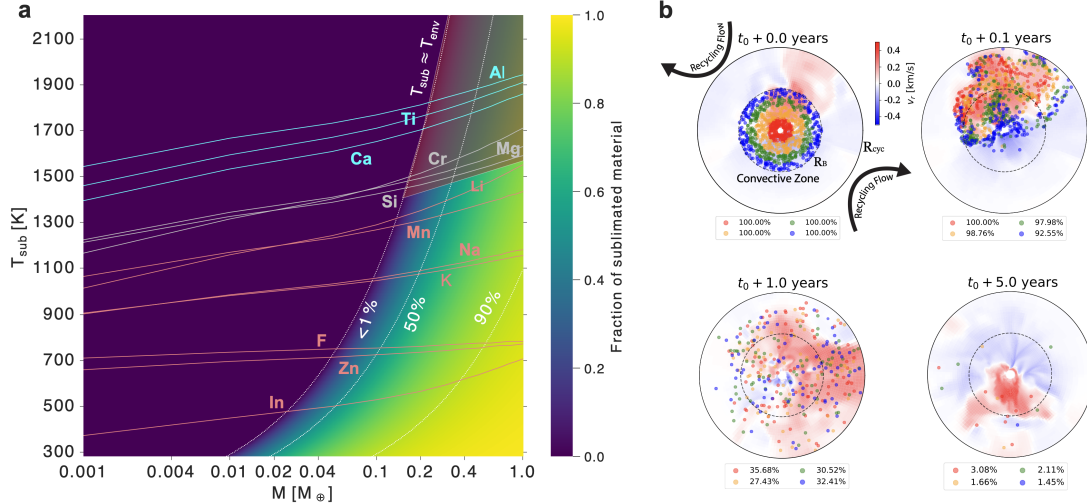


Figure 3: **Devolatilization during pebble accretion.** (a) Sublimation of major rock-forming lithophile elements in the envelope of a protoplanet that grows through pebble accretion. (b) 3-D hydrodynamical simulations of the temporal evolution of embedded particles (representing sublimated materials) in the convective envelope of a protoplanet during pebble accretion.

Download/Website: <https://arxiv.org/abs/2608.24407>

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3 Exoplanet Archives

August 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, September 8, 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.

August 27, 2026

We Made AstroFetch Happen!

We're excited to announce that AstroFetch, an AI-powered assistant that answers natural-language questions about exoplanets using archive data, is now in open beta.

The service has been integrated into the Exoplanet Archive's Explore the Archive search interface on the home page. A free AstroFetch account is required to view results; sign up at astrofetch.ipac.caltech.edu. Note that account approval may take up to three business days.

To use the service:

1. Go to the NASA Exoplanet Archive home page.
2. Click the **Query AstroFetch** AI tab.
3. Enter a question in the text field, such as "Compare the radii of confirmed exoplanets discovered by the transit method vs. radial velocity" or "Plot a histogram of stellar effective temperatures for systems with multiple confirmed planets, with a log y-axis."

Note: AstroFetch is optimized for natural-language queries. For radius and single-object searches based on object names or coordinates, please continue using the **Search Inventory** tab.

4. Click **Query AI** to view your results in a new browser tab within the AstroFetch interface.
The service is in open beta, which means we want to hear what you think! Please check the AstroFetch Frequently Asked Questions and send your feedback and suggestions to astrofetch-help@ipac.caltech.edu.

August 20, 2026

What's New (and Old): 18 Planets, Including a TESS Discovery Around an Ancient Star

This week's planetary haul includes Gl 725 B c (a.k.a. GJ 725 B c), a habitable-zone exoplanet just 11.4 light-years from Earth, and TOI-7169 b, a planet orbiting a star that has one of the highest measured ages in the archive.

The Gl 725 B system includes planet candidate Gl 725 B b, which we have also added to enable follow-up study. Learn more about this interesting system in the IRAP media release and discovery paper.

The other 16 new planets added this week are HD 202206 b, HIP 81991 b, KOI-319 b & c, KOI-884 e, MOA-2020-BLG-108L b, TOI-603 b, TOI-2114 b, TOI-4492 b, TOI-5806 b, TOI-5811 B b, TOI-6158 b, TOI-7189 b, TOI-7265 B b, TOI-7393 b, and TOI-7394 B b.

There are also new data for HD 202206 c, KOI-884 d, NGTS-10 A b, OGLE-2014-BLG-0676L b, and TOI-5916 b.

August 6, 2026

Three's Company

This week's new planets include TOI-5628 A b, a rare giant planet orbiting an M dwarf with an associated white dwarf companion, and HD 60779 b & c, a pair of planets orbiting a bright, Sun-like star.

New data have also been added for CoRoT-1 b, HAT-P-18 b, K2-24 b & c, K2-312 b & c (a.k.a. HD 80653 b & c), TOI-442 b (a.k.a. LP 714-47 b), TOI-4438 b, TOI-4504 b, c, & d, and Qatar-4 b.

Download/Website: <https://exoplanetarchive.ipac.caltech.edu>

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4 Jobs and Positions

ESA Archival Research Visitor Programme

Guido De Marchi

ESAC (Spain) and ESTEC (Netherlands), Autumn 2026 and Winter 2027

To increase the scientific return from its space science missions, the European Space Agency (ESA) welcomes applications from scientists interested in pursuing research projects based on data publicly available in the ESA Space Science Archives.

The ESA Archival Research Visitor Programme is open to scientists, at all career levels, who are affiliated with institutes in ESA Member States and Cooperating States. All visits must comply with the ESA security directives, which may necessitate additional checks. Early-career scientists and PhD students are particularly encouraged to apply. We encourage applications from women and minorities. The peer-review evaluation process is anonymised to ensure equal opportunities for all applicants.

During their stay, visiting scientists will have access to archives and mission specialists for help with the retrieval, calibration, and analysis of archival data. In principle, all areas of space research covered by ESA science missions can be supported.

Residence lasts typically between one and three months, also distributed over multiple visits. Research projects can be carried out at ESAC (Madrid, Spain) and at ESTEC (Noordwijk, Netherlands). To offset the expenses incurred by visitors, ESA covers travel costs from and to the home institution and provides support for lodging expenses and meals.

Applications received by 31 October 2026, 23:59 UTC, will be considered for visits in spring and summer 2027.

For further details, including areas of research and contact information, please refer to the website and email address indicated below.

Download/Website: <https://www.cosmos.esa.int/web/esdc/visitor-programme>

Contact: arvp@cosmos.esa.int

ESA Research Fellowship in Space Science (Postdoctoral Fellowships)

European Space Agency (ESA)

We are pleased to announce the 2026 Call for Applications for the European Space Agency's Research Fellowships in Space Science. We expect to hire 9-10 postdoctoral fellows who will start their fellowship in fall 2027.

The deadline for applications is 21 September 2026.

ESA's postdoctoral Research Fellowship programme offers early-career researchers the possibility to carry out independent research in a variety of disciplines. Research Fellowships in Space Science offer the opportunity to contribute to ESA's endeavour to explore our Solar System and the Universe in the fields of heliophysics, planetary science, astrophysics, and fundamental physics.

ESA Research Fellow contracts have a maximum duration of three years. Projects initially last two years and are frequently extended to a third year upon submission of a dedicated proposal.

Research Fellowships in Space Science can be located at any of the following institutes:

- European Space Astronomy Centre (ESAC) in Villafranca del Castillo near Madrid, Spain
- European Space Research and Technology Centre (ESTEC) in Noordwijk, the Netherlands
- ESA Office at Space Telescope Science Institute (STScI) in Baltimore, Maryland, USA

Detailed information and a link to the application portal can be found on the fellowship webpage:

Download/Website: <https://www.cosmos.esa.int/fellowship>

Contact: victoria.grinberg@esa.int

5 Conferences and Workshops

Spectroscopy of Exoplanets: New Frontiers **Future characterisation of exoplanets, cool stars and Brown Dwarfs and the spectroscopic data they require**

Cumberland Lodge, Windsor Great Park, UK, 16–19 July 2027,

Jonathan Tennyson, Sergey Yurchenko, and Tony Lynas-Gray

Department of Physics and Astronomy, University College London, WC1E 6BT, London, UK

Exoplanet atmosphere science is entering a new era, with JWST already delivering transformative spectra and future facilities such as Ariel, ELT, HWO, and other dedicated observatories promising broader wavelength coverage, higher precision, and access to new classes of planets. Realising this potential will require spectroscopic data of matching accuracy, completeness, and relevance. This conference will bring together observers, modellers, laboratory spectroscopists, theoreticians, and database developers to discuss the molecular and atomic data needed to interpret current and future observations including high-temperature opacities, line lists, pressure broadening, photodissociation, non-LTE processes, and high-resolution spectroscopy. The aim is to connect spectroscopic data producers and users, identify the most urgent data needs, and help prepare the community for the next decade of characterisation of exoplanets, cool stars and Brown Dwarfs.

Programme, registration, accommodation, and fee details will follow later in 2026. A non-binding expression-of-interest form is now open.

Conference website:

<https://exomol.com/activities/spectroscopy-of-exoplanets-new-frontiers/>

Expression of interest:

<https://exomol.com/activities/spectroscopy-of-exoplanets-new-frontiers/expression-of-interest/>

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Spectroscopy of Exoplanets: New Frontiers

Jonathan Tennyson, Sergey Yurchenko, and Tony Lynas-Gray (ExoMol)

Cumberland Lodge, Windsor Great Park, UK, 16–19 July 2027

Save the date for the next conference in the ExoMol series. The meeting will bring together users and providers of spectroscopic data—observers, modellers, laboratory spectroscopists, theoreticians, and database developers—to discuss the data needed for the future characterisation of exoplanets, cool stars, and brown dwarfs. Programme, registration, accommodation, and fee details will follow later in 2026. A non-binding expression-of-interest form is now open.

Website:

<https://exomol.com/activities/spectroscopy-of-exoplanets-new-frontiers/>

Expression of interest: <https://exomol.com/activities/spectroscopy-of-exoplanets-new-frontiers/expression-of-interest/>

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6 As seen on astro-ph

The following list contains exoplanet related entries appearing on astro-ph in August 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.

August 2026

- astro-ph/2608.00173: **The Dynamics of Planetary Ejection** by *Malena Rice et al.*
- astro-ph/2608.00349: **Investigating the differential limb coupling effect for diffraction-limited spectrographs with PARVI** by *Andrea S. J. Lin et al.*
- astro-ph/2608.00318: **Planetary atmospheric escape and disk formation around WDJ0914+1914** by *C. Villarreal D'Angelo et al.*
- astro-ph/2608.00343: **The generation of spiral density waves by MRI in accretion discs** by *G. Mamatsashvili et al.*
- astro-ph/2608.00520: **Using High-Resolution Spectroscopy to Study the Composition, Temperature, and Dynamics of Exoplanet Atmospheres** by *Mu'allim Yakubu*
- astro-ph/2608.00683: **ESCAPE: a small explorer mission to study the stellar drivers of exoplanet evolution** by *Allison Youngblood et al.*
- astro-ph/2608.01493: **MiraSOL: a DMD-based spectrograph for resolved solar spectroscopy** by *Christian Robles et al.*
- astro-ph/2608.02158: **Dynamo generation reveals redox conditions during formation of differentiated planetesimals** by *Hannah R. Sanderson et al.*
- astro-ph/2608.02173: **Ammonium salt formation and abundance in protoplanetary disks** by *Maxime Ruaud et al.*
- astro-ph/2608.02204: **Accretion across scales: streamers, surface-layer transport, and rapid replenishment in young protoplanetary discs** by *Christian Granzow Holm et al.*
- astro-ph/2608.02577: **Rotation, spectral type, and albedo of the potentially hazardous asteroid (153814) 2001 WN₅ Prior to the 2028 June close approach** by *Jin Beniyama et al.*
- astro-ph/2608.04250: **Searching for Habitable Exoplanets with Relative Astrometry (SHERA). I. The Case for Searching for Planets in Binary Star Systems** by *Jessie L. Christiansen et al.*
- astro-ph/2608.04110: **A new window in time: a mid-infrared slit spectroscopy mode for precision time-series astronomy with JWST/MIRI** by *Achrene Dyrek et al.*
- astro-ph/2608.04109: **Breaking the brightness barrier: JWST/NIRCam DHS spectroscopy for high-precision time-series observations** by *Achrene Dyrek et al.*
- astro-ph/2608.04062: **Charged Clouds of Ionized Gas Emerge from Tribocharging Grains** by *Patrick Hock et al.*
- astro-ph/2608.03980: **Helium-poor winds do not require helium-poor planets** by *Leonardos Gkouvelis, Francisco J. Pozuelos*
- astro-ph/2608.03857: **A broad exploration of climate and observability of close-in rocky exoplanets: applications to Ross 128 b** by *Mathilde Houelle et al.*
- astro-ph/2608.03406: **Phase-curve approach to study atmospheric flows in hot Jupiters** by *D. Shulyak et al.*
- astro-ph/2608.04086: **Self-consistent 1D modelling of Jupiter's upper atmosphere as an exoplanet analogue** by *Nils-Martin Robeling et al.*
- astro-ph/2608.05445: **SMA 200-400 GHz Survey for 10 faint Class II Disks in the Taurus Molecular Cloud** by *Chia-Ying Chung et al.*
- astro-ph/2608.05264: **Inventories of Rich Carbon-Chain Chemistry in Prestellar and Starless Cores in the Perseus Molecular Cloud** by *Anissa Pokorny-Yadav et al.*
- astro-ph/2608.04803: **Spatial distribution of water ice in the protoplanetary silhouette disk d216-0939** by *J. S. Martin et al.*

- astro-ph/2608.04512: **A Formation-Stage Bottleneck for Exomoons around Close-in Rocky Planets** by *Rongxi Bi et al.*
- astro-ph/2608.04837: **Circular polarization as a probe of cloud properties and asymmetries in giant exoplanet atmospheres** by *M. B. Michaelis, S. Wolf*
- astro-ph/2608.05500: **The TASSIE Program. II: Three Close-In Companions Orbiting Sun-Like Stars** by *T. Plunkett et al.*
- astro-ph/2608.05661: **Dust transport in envelopes of disk-embedded planets: I. Convectively stable envelopes** by *Ayumu Kuwahara, Michiel Lambrechts*
- astro-ph/2608.05672: **Dust transport in envelopes of disk-embedded planets: II. Fully convective envelopes** by *Ayumu Kuwahara, Michiel Lambrechts*
- astro-ph/2608.05885: **Exploration of Exoplanet Atmospheres with the James Webb Space Telescope** by *Sasha Hinkley, David K. Sing*
- astro-ph/2608.05962: **The SPACE Program II: No discernible spectral features in the transmission spectrum of the sub-Neptune HD 191939 b observed with HST/WFC3** by *Cyril Gapp et al.*
- astro-ph/2608.06207: **Veiled in Starlight: Impacts of Stellar Contamination on Retrievals of TRAPPIST-1f's Atmospheric Composition** by *Harper Rosenthal et al.*
- astro-ph/2608.06268: **A Streamer Driving Misalignment in the Circumtriple Disk of GW Ori** by *Maria Galloway-Sprietsma et al.*
- astro-ph/2608.06457: **Geometry of dust rings in protoplanetary disks: the case of LkCa 15** by *Yansong Qian, Yanqin Wu*
- astro-ph/2608.06475: **The False Spin of an Exo-Venus** by *Stephen R. Kane*
- astro-ph/2608.06594: **Optomechanical Design of the MANTIS SmallSat: An Extreme-, Far- and Near-Ultraviolet Spectrograph for Exoplanet Host Stars** by *Brian Fleming et al.*
- astro-ph/2608.06600: **Alkali Metallicity, Mineral Clouds, and Deep Atmospheric Variability on Jupiter** by *Xi Zhang et al.*
- astro-ph/2608.06649: **Multi-epoch ultraviolet observables for breaking the radius-albedo degeneracy in directly imaged exoplanets** by *Suniti Sanghavi et al.*
- astro-ph/2608.07159: **Instability and Angular Momentum Transfer in Thick Circumbinary Disks** by *Allen R. Murray, Paul C. Duffell*
- astro-ph/2608.07461: **A clear detection of proper motion confirms that the claimed $z \simeq 32$ galaxy candidate, "Capotauro", is a Y-type brown dwarf** by *F. -Y. F. Liu et al.*
- astro-ph/2608.07128: **Pyrat Bay 2.0: an Upgraded Framework for Exoplanet Atmosphere Modeling in the JWST Era** by *Patricio E. Cubillos et al.*
- astro-ph/2608.06749: **An Observational Study of Systematics in Differential Transmission Spectroscopy Using HFOSC on the Himalayan Chandra Telescope** by *Manjunath Bestha et al.*
- astro-ph/2608.08891: **Gas Flows and Mass Accretion Rates in Eight Dippers: HD 142666, HD 143006, HD 145718, V935 Sco, DoAr 25, EPIC 204638512, EPIC 205151387, and EPIC 203850058** by *Michael L. Sitko et al.*
- astro-ph/2608.09627: **A Chemical Inventory of the Disk around the Class 0 Protostar L1527 IRS with ALMA** by *Merel L. R. van 't Hoff et al.*
- astro-ph/2608.09471: **Global simulations of accretion flows onto perturbers embedded in magnetized disks -I. MRI and jet formation in ideal MHD** by *Raúl O. Chametla et al.*
- astro-ph/2608.10142: **A Pre-Main Sequence Binary Viewed Through its Circumbinary Disk: A New Phase for KH 15D** by *Catrina M. Hamilton et al.*
- astro-ph/2608.10094: **SMA Observations Reveal Abundant HNC Chemistry in Transition Disks** by *Kyle Gresko et al.*
- astro-ph/2608.10212: **The final design of GMagAO-X: high-contrast imaging at first-light of the GMT** by *Jared R. Males et al.*
- astro-ph/2608.09920: **IPA: Morphology and Kinematics of Molecular Hydrogen Winds in Five Young Proto-**

- stars across the Mass Spectrum Observed with JWST** by *Himanshu Tyagi et al.*
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