ExoPlanet News

An Electronic Newsletter

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Contents

1 Editorial

Welcome to Edition 185 of the 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 the next month we look 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 December 10th 2024.

Thanks again for your support, and best regards from the editorial team,

Jeanne Davoult
Leander Schlarmann
Daniel Angerhausen
Haiyang Wang
Timm-Emanuel Riesen

2 Abstracts of refereed papers

Planetary Population Synthesis

R. Burn[1] *and C. Mordasini*[2]

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Review to be published in Handbook of Exoplanets, (arXiv:2410.00093)

The planetary population synthesis method aims at comprehensively testing planet formation theories against observational evidence and providing theoretical sets of planets to help interpret observations and inform instrument development. Recent developments on the theoretical and observational sides are reviewed: First, observational constraints are summarized, then, the work flow of population synthesis and its two main components are presented, which are, global end-to-end models of planetary formation and evolution and probability distributions for the disk initial conditions. Next, the output of four recent population synthesis models is compared in detail and differences and similarities are discussed. The goal is to help the reader understand the assumptions that were made and how they impact the results. Furthermore, future directions of research are identified and the impact of current and future observational programs is discussed. With JWST, evidence on disk and planet compositions emerges. Planet formation models need to prepare for these near-future developments by including self-consistent magnetic wind-driven gas and dust disk evolution, planetary migration, as well as employ hybrid pebble and planetesimal accretion, which are identified as dominant modes of accretion in different mass regimes.

Download/Website: `https://arxiv.org/abs/2410.00093`

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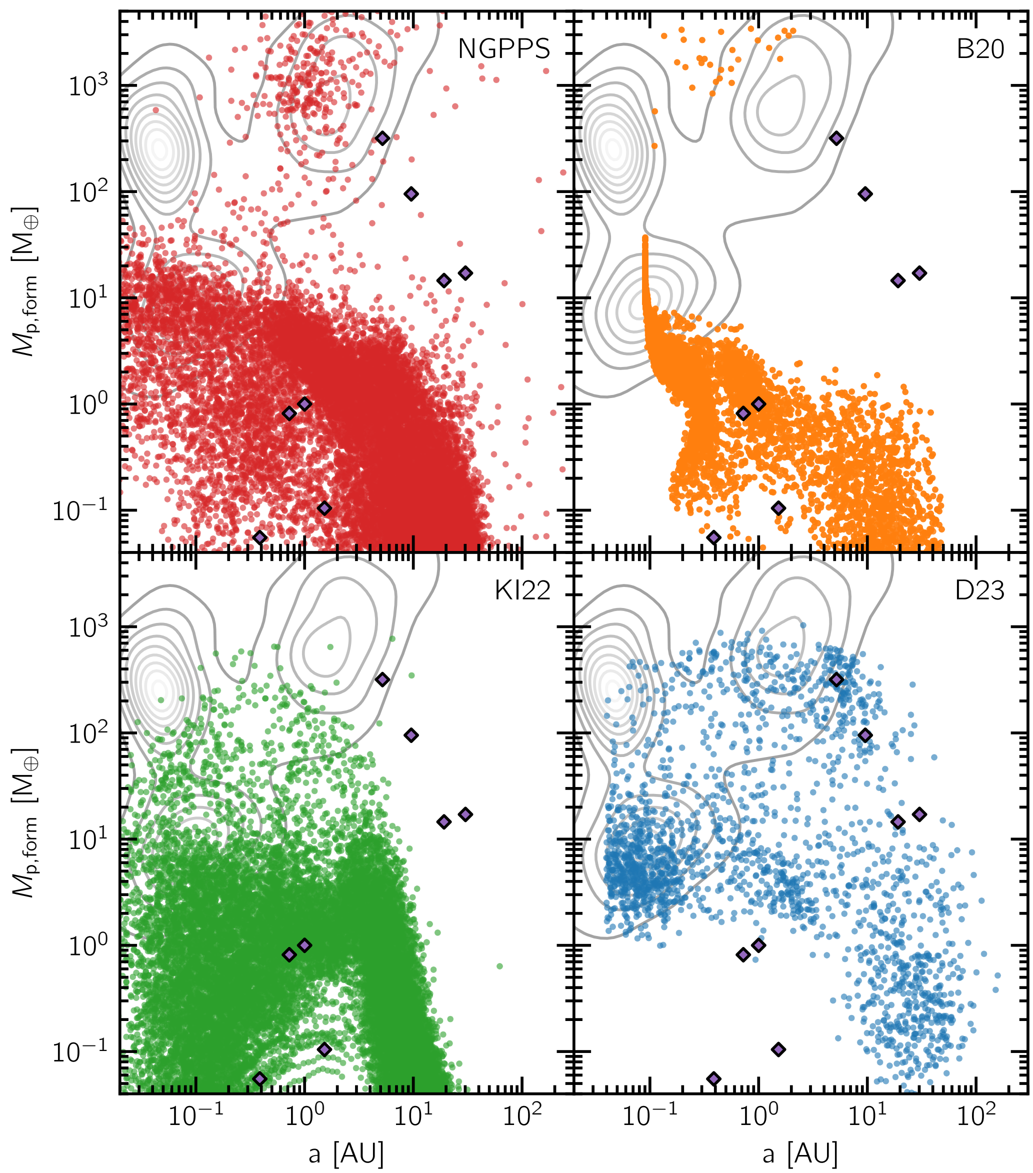

Figure 1: Synthetic mass-distance diagrams for the four different theoretical models compared in this review. From top left to bottom right the panes show results obtained using the Bern Model (Emsenhuber et al. 2021, NGPPS); from Brügger et al. (2018, 20220) (B20); Kimura & Ikoma (2022) (KI22); and Bitsch et al. (2015)/Drążkowska et al. (2023) (D23). The mass and location are taken after the formation stage, that is, not including long-term mass loss processes and tidal migration. For orientation, a 2D Gaussian kernel density estimate with 0.18 dex bandwidth of the *biased* observed exoplanet distribution and the Solar system planets are shown.

Gas permeability and mechanical properties of dust grain aggregates at hyper- and zero-gravity

Holly L. Capelo[1], Jean-David Bodénan[2,5], Martin Jutzi[1], Jonas Kühn[1], Romain Cerubini[1], Bernhard Jost[1], Linus Stöckli[1], Stefano Spadaccia[1], Clemence Herny[1], Bastian Gundlach[3] , Günter Kargl[4], Clément Surville[5], Lucio Mayer[5], Maria Schönbächler[2], Nicolas Thomas[1], Antoine Pommerol[1]

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MNRAS, published

Particle-particle and particle-gas processes significantly impact planetary precursors such as dust aggregates and planetesimals. We investigate gas permeability (κ) in 12 granular samples, mimicking planetesimal dust regoliths. Using parabolic flights, this study assesses how gravitational compression – and lack thereof– influences gas permeation, impacting the equilibrium state of low-gravity objects. Transitioning between micro- and hyper-gravity induces granular sedimentation dynamics, revealing collective dust-grain aerodynamics. Our experiments measure κ across Knudsen number (Kn) ranges, reflecting transitional flow. Using mass and momentum conservation, we derive κ and calculate pressure gradients within the granular matrix. Key findings: 1. As confinement pressure increases with gravitational load and mass flow, κ and average pore space decrease. This implies that a planetesimal's unique dust-compaction history limits sub-surface volatile outflows. 2. The derived pressure gradient enables tensile strength determination for asteroid regolith simulants with cohesion. This offers a unique approach to studying dust-layer properties when suspended in confinement pressures comparable to the equilibrium state on planetesimals surfaces, which will be valuable for modelling their collisional evolution. 3. We observe a dynamical flow symmetry breaking when granular material moves against the pressure gradient. This occurs even at low Reynolds numbers, suggesting that Stokes numbers for drifting dust aggregates near the Stokes-Epstein transition require a drag force modification based on permeability.

Download/Website: `https://doi.org/10.1093/mnras/stae1898`

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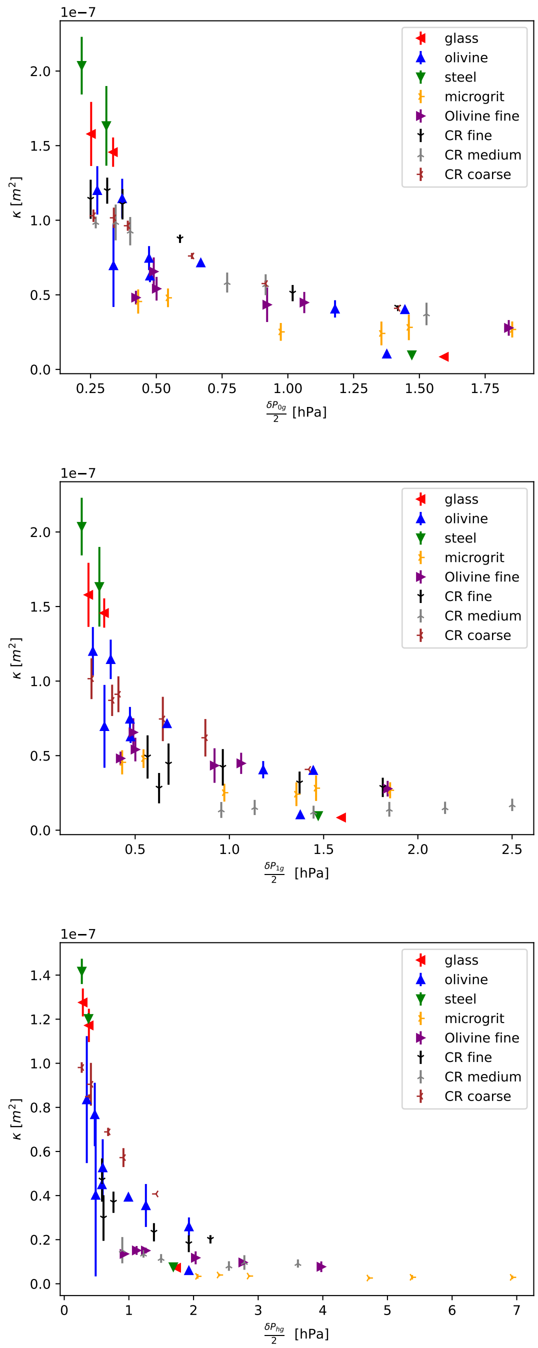

Figure 2: Scatter plot of the permeability coefficient κ, as a function of mean pressure $\frac{\delta P}{2}$, for each chamber and each measurement series. Top panel: $0g$. Middle panel: g_{Earth}. Bottom panel: hg. The various colors and symbols refer to different material for dust analog material. The increasing permeability at lower pressures reflects the role of molecular diffusion. The shift towards lower permeability with greater gravitational load is due to the change in pore space in the granular media which produces resistance to the gas flow.

TIC 393818343 c: Discovery and characterization of a Neptune-like planet in the Delphinus constellation

G. Conzo [1], *N. Leiner* [2], *K. Lynch, M. Moriconi* [1], *N. Ruocco* [3] *and T. Scarmato* [4]
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Submitted to ArXiv,

We report on the statistical confirmation of a second planet inside the TIC 393818343 system. The first planet *TIC 393818343 b* has been confirmed and classified as a Warm Jupiter planet with a period of $P = (16.24921 \pm 0.00003)$ days. The second planet in the system has an orbital period of $P = (7.8458 \pm 0.0023)$ days and orbits 2.05 times closer to its host star. The second planet was initially spotted by the Las Cumbres Observatory (LCOGT) and amateur astronomers. This Super-Neptunian exoplanet marks TIC 393818343 as a multi-planetary system.

Download/Website: `https://arxiv.org/abs/2410.07425`

Contact: giuconzo@gmail.com

Tidal evolution of Earth-like planets in the habitable zone of low-mass stars

E. F. S. Valente[1], *A.C.M. Correia*[1,2], *P. Auclair-Desrotour*[2], *M. Farhat*[2],*J. Laskar*[2]
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Astronomy & Astrophysics, published (2024A&A...687A..47V)

Earth-like planets in the habitable zone of low-mass stars undergo strong tidal effects that modify their spin states. These planets are expected to host dense atmospheres that can also play an important role in the spin evolution. On one hand, gravitational tides tend to synchronize the rotation with the orbital mean motion, but on the other hand, thermal atmospheric tides push the rotation away, and may lead to asynchronous equilibria. Here, we investigate the complete tidal evolution of Earth-like planets, by taking into account the effect of the obliquity and eccentric orbits. We adopt an Andrade rheology for the gravitational tides and benchmark the unknown parameters with the present rotation of Venus. We then apply our model to Earth-like planets and show that asynchronous rotation can be expected for planets orbiting stars with masses between 0.4 and 0.9 $M_\odot$ and semi-major axes between 0.2 and 0.7 au. Interestingly, we find that Earth-like planets in the habitable zone of stars with masses $\sim 0.8\ M_\odot$ may end up with an equilibrium rotation of 24 h. We additionally find that these planets can also develop high obliquities, which may help to sustain temperate environments.

Download/Website: `https://arxiv.org/abs/2410.00739`

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Unravelling sub-stellar magnetospheres

Robert D. Kavanagh[1,2], *Harish K. Vedantham*[1,3], *Kovi Rose*[4,5] *& Sanne Bloot*[1,3]

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Astronomy & Astrophysics, in press (arXiv:2410.18073)

At the sub-stellar boundary, signatures of magnetic fields begin to manifest at radio wavelengths, analogous to the auroral emission of the magnetised solar system planets. This emission provides a singular avenue for measuring magnetic fields at planetary scales in extrasolar systems. So far, exoplanets have eluded detection at radio wavelengths. However, ultracool dwarfs (UCDs), their higher mass counterparts, have been detected for over two decades in the radio. Given their similar characteristics to massive exoplanets, UCDs are ideal targets to bridge our understanding of magnetic field generation from stars to planets. In this work, we develop a new tomographic technique for inverting both the viewing angle and large-scale magnetic field structure of UCDs from observations of coherent radio bursts. We apply our methodology to the nearby T8 dwarf WISE J062309.94-045624.6 (J0623) which was recently detected at radio wavelengths, and show that it is likely viewed pole-on. We also find that J0623's rotation and magnetic axes are misaligned significantly, reminiscent of Uranus and Neptune, and show that it may be undergoing a magnetic cycle with a period exceeding 6 months in duration. These findings demonstrate that our method is a robust new tool for studying magnetic fields on planetary-mass objects. With the advent of next-generation low-frequency radio facilities, the methods presented here could facilitate the characterisation of exoplanetary magnetospheres for the first time.

Download/Website: `https://arxiv.org/abs/2410.18073`
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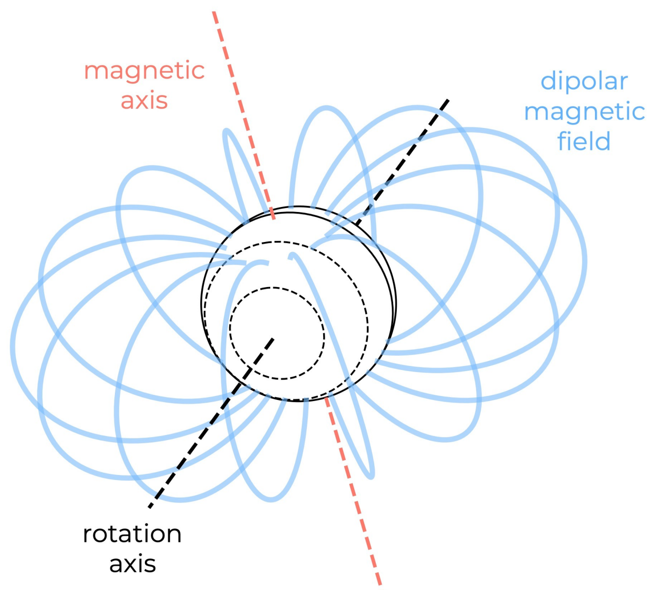

Figure 3: The magnetic field geometry we infer for the T8 dwarf J0623 from radio observations with the MeerKAT telescope. We find that it has a dipolar field strength exceeding ~ 600 Gauss and a large magnetic obliquity (the angle between its rotation and magnetic axes), reminiscent of the magnetic fields of Uranus and Neptune. This information can provide insight into both the internal composition and dynamo. We also find evidence that this brown dwarf is undergoing a magnetic cycle.

Database of Candidate Targets for the LIFE Mission

F. Menti[1], J. A. Caballero[2], M. C. Wyatt[3], A. G. Muñoz[4], K. G. Stassun[5], E. Alei[6], M. Demleitner[7], G. Kennedy[8], T. Lichtenberg[9], U. Schmitt[10], J. S. Schonhut-Stasik[11], H. S. Wang[12], S. P. Quanz[1,13] and the LIFE Collaboration
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Research Notes of the AAS, published (2024RNAAS...8..267M)

We present the database of potential targets for the Large Interferometer For Exoplanets (LIFE), a space-based mid-infrared nulling interferometer mission proposed for the Voyage 2050 science program of the European Space Agency (ESA). The database features stars, their planets and disks, main astrophysical parameters, and ancillary observations. It allows users to create target lists based on various criteria to predict, for instance, exoplanet detection yields for the LIFE mission. As such, it enables mission design trade-offs, provides context for the analysis of data obtained by LIFE, and flags critical missing data. Work on the database is in progress, but given its relevance to LIFE and other space missions, including the Habitable Worlds Observatory (HWO), we present its main features here. A preliminary version of the LIFE database is publicly available on the German Astrophysical Virtual Observatory (GAVO).

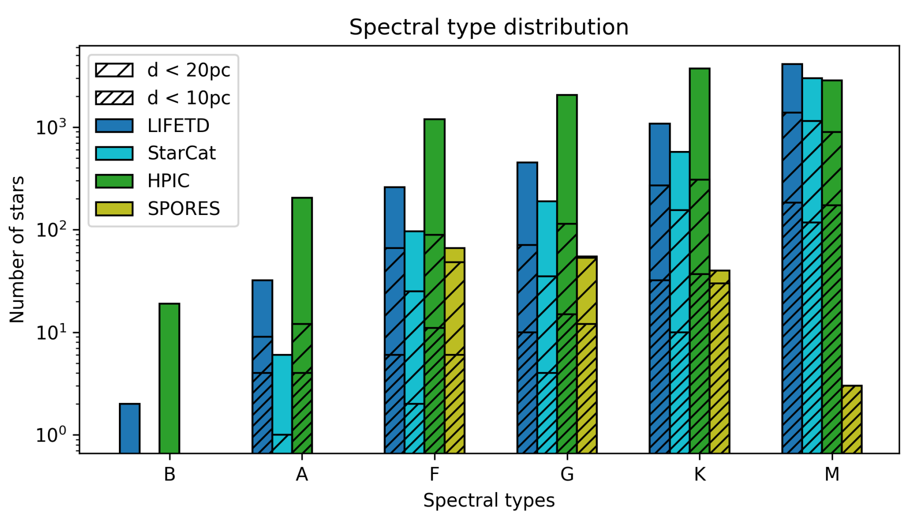

Figure 4: Spectral distribution of stars in the LIFE target database (dark blue), LIFE-StarCat (light blue), HPIC (green), and SPORES (olive).

Download/Website: `https://iopscience.iop.org/article/10.3847/2515-5172/ad887e`

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Planetary Mass Determinations from a Simplified Photodynamical Model - Application To The Complete Kepler Dataset

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The Astronomical Journal, in press

We use PyDynamicaLC, a model using the least number of- and the least correlated- degrees of freedom needed to derive a photodynamical model, to describe some of the smallest- and lowest TTV (transit timing variations) amplitude- of the Kepler planets. We successfully analyze 64 systems containing 218 planets, for 88 of which we were able to determine significant masses (to better than 3σ. We demonstrate consistency with literature results over two orders of magnitude in mass, and for the planets that already had literature mass estimations, we were able to reduce the relative mass error by $\sim 22\%$ (median value). Of the planets with determined masses 23 are new mass determinations with no previous significant literature value, including a planet smaller and lighter than Earth (KOI-1977.02 / Kepler-345 b). These results demonstrate the power of photodynamical modeling with the appropriately chosen degrees of freedom. This will become increasingly more important as smaller planets are detected, especially as the TESS mission gathers ever longer-baseline light curves and for the analysis of the future PLATO mission data.

Download/Website: `https://arxiv.org/abs/2410.11401`

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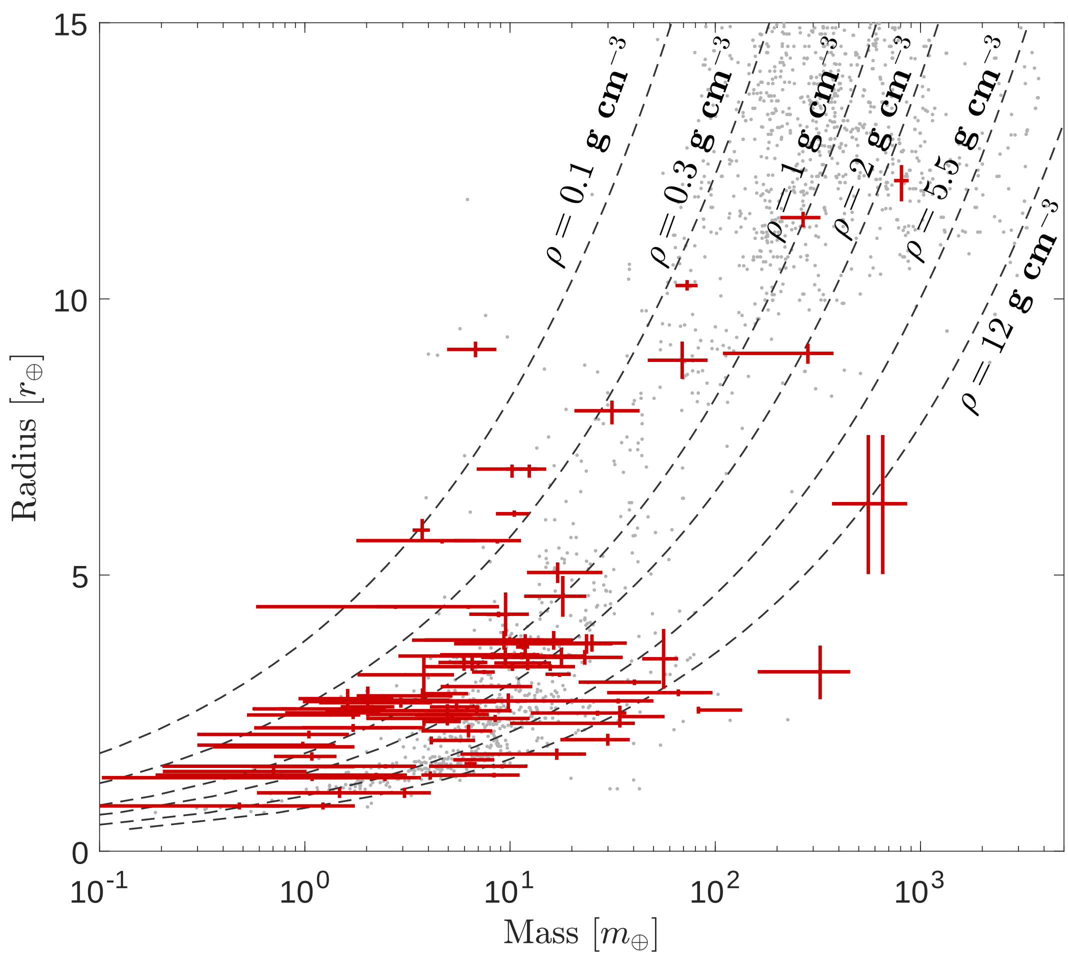

Figure 5: The mass-radius plane for all planets with significant mass in this study (maroon error bars). Note that a planet may appear more than once in the plot if more than one group of solutions is arrived at, and these points will share a common radius. Over-plotted are lines of constant bulk density, as well as all planets with mass and radii determined to be better than 3σ from the NASA NExSci database (light gray points).

Detection of faculae in the transit and transmission spectrum of WASP-69b

D. J. M. Petit dit de la Roche[1], *H. Chakraborty* [1], *M. Lendl*[1], *D. Kitzmann* [2,3], *A. G. M. Pietrow* [4,5], *B. Akinsanmi* [1], *H. M. J. Boffin* [6], *Patricio E. Cubillos* [7,8], *A. Deline*[1], *D. Ehrenreich*[1], *L. Fossati*[7], *E. Sedaghati* [9]

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A&A, in press (arXiv:2410.18663)

Transmission spectroscopy is a powerful tool for understanding exoplanet atmospheres. At optical wavelengths, this technique makes it possible to infer the composition and the presence of aerosols in the atmosphere. However, unocculted stellar activity can result in contamination of atmospheric transmission spectra by introducing spurious slopes and molecular signals. We aim to characterise the atmosphere of the transiting exoplanet WASP-69b, a hot Jupiter orbiting an active K star, and characterise the activity levels of the host star. We obtained three nights of spectrophotometric data with the FORS2 instrument on the VLT, covering a wavelength range of 340-1100 nm. These were divided into 10 nm binned spectroscopic light curves, which were fit with a combination of Gaussian processes and parametric models to obtain a transmission spectrum. We performed retrievals on the full spectrum with combined stellar activity and planet atmosphere models. We directly detect a facula in the form of a hot-spot-crossing event in one of the transits and indirectly detect unocculted faculae through an apparently decreasing radius towards the blue end of the transmission spectrum. We determine a facula temperature of $\Delta T = +644^{+427}_{-263}$ K for the former and a stellar coverage fraction of around 30% with a temperature of $\Delta T = +231 \pm 72$ K for the latter. The planetary atmosphere is best fit with a high-altitude cloud deck at 1.4 mbar that mutes atomic and molecular features. We find indications of water and ammonia with log(H_2O)=$-2.01^{+0.54}_{-0.86}$ and log(NH_3)=$-3.4^{+0.96}_{-5.20}$, respectively, and place 3σ upper limits on TiO ($< 10^{-7.65}$) and K ($< 10^{-7}$). We see a lack of evidence of Na, which we attribute to the presence of clouds. The simultaneous multi-wavelength observations allow us to break the size–contrast degeneracy for facula crossings, meaning we can obtain temperatures for both the directly and indirectly detected faculae, which are consistent with each other.

Download/Website: `https://arxiv.org/pdf/2410.18663`

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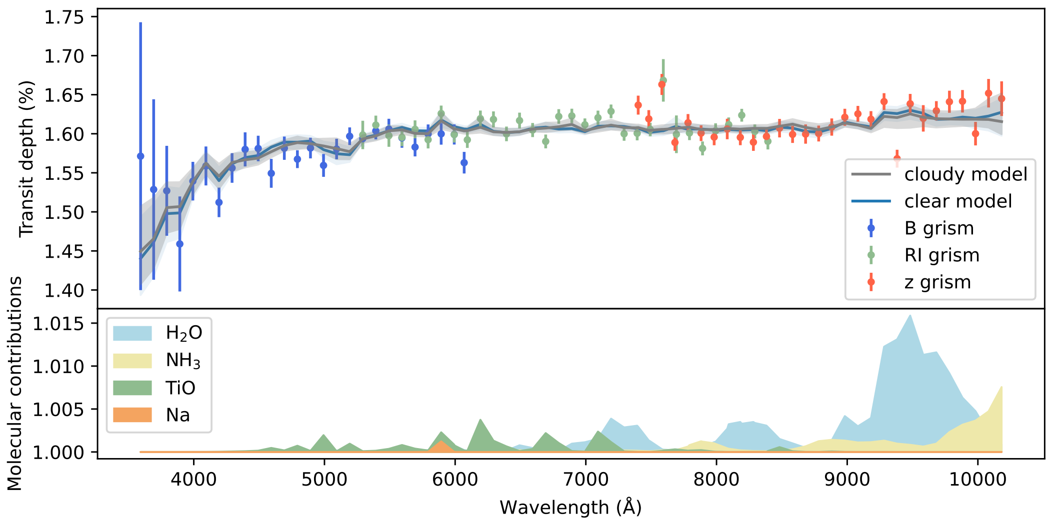

Figure 6: Transmission spectrum of WASP-69b. Top: Data points and retrieved models. The blue green and red points are the transit depths obtained from the B, RI, and z grism observations, respectively. The grey line represents the median of all retrieval posterior sample spectra for the favoured power-law cloud model, with the shaded region indicating their 1σ interval. The blue line represents the cloud free model. Bottom: Relative contributions of the different atoms and molecules to the retrieved spectrum.

Disequilibrium Chemistry, Diabatic Thermal Structure, and Clouds in the Atmosphere of COCONUTS-2b

Z. Zhang[1,2], S. Mukherjee[1], M.C. Liu[3], J.J. Fortney[1], E. Mader[1], W.M.J. Best[4], T.J. Dupuy[5], S.K. Leggett[6], T. Karalidi[7], M.R. Line[8], M.S. Marley[9], C.V. Morley[4], M.W. Phillips[5], R.J. Siverd[3], J.A. Zalesky[8]

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Astronomical Journal, in press (arXiv:2410.10939v2)

Located 10.888 pc from Earth, COCONUTS-2b is a planetary-mass companion to a young (150–800 Myr) M3 star, with a wide orbital separation (6471 au) and a low companion-to-host mass ratio (0.021 ± 0.005). We have studied the atmospheric properties of COCONUTS-2b using newly acquired 1.0–2.5 μm spectroscopy from Gemini/Flamingos-2. The spectral type of COCONUTS-2b is refined to T9.5 ± 0.5 based on comparisons with T/Y dwarf spectral templates. We have conducted an extensive forward-modeling analysis, comparing the near-infrared spectrum and mid-infrared broadband photometry of COCONUTS-2b with sixteen state-of-the-art atmospheric model grids developed for brown dwarfs and self-luminous exoplanets near the T/Y transition. The `PH`$_3$`-free ATMO2020++`, `ATMO2020++`, and `Exo-REM` models best match the specific observations of COCONUTS-2b, regardless of variations in the input spectrophotometry. This analysis suggests the presence of disequilibrium chemistry, along with a diabatic thermal structure and/or clouds, in the atmosphere of COCONUTS-2b. All models predict fainter Y-band fluxes than observed, highlighting uncertainties in the alkali chemistry models and opacities. We determine a bolometric luminosity of $\log{(L_{\rm bol}/L_{\odot})} = -6.18$ dex, with a 0.5 dex-wide range of $[-6.43, -5.93]$ dex that accounts for various assumptions of atmospheric models. Using several thermal evolution models, we derive an effective temperature of $T_{\rm eff} = 483^{+44}_{-53}$ K, a surface gravity of $\log{(g)} = 4.19^{+0.18}_{-0.13}$ dex, a radius of $R = 1.11^{+0.03}_{-0.04}$ R$_{\rm Jup}$, and a mass of $M = 8 \pm 2$ M$_{\rm Jup}$. Various atmospheric model grids consistently indicate that COCONUTS-2b's atmosphere likely has sub- or near-solar metallicity and C/O. These findings provide valuable insights into COCONUTS-2b's formation history and the potential outward migration to its current wide orbit.

Download/Website: `https://ui.adsabs.harvard.edu/abs/2024arXiv241010939Z/abstract`

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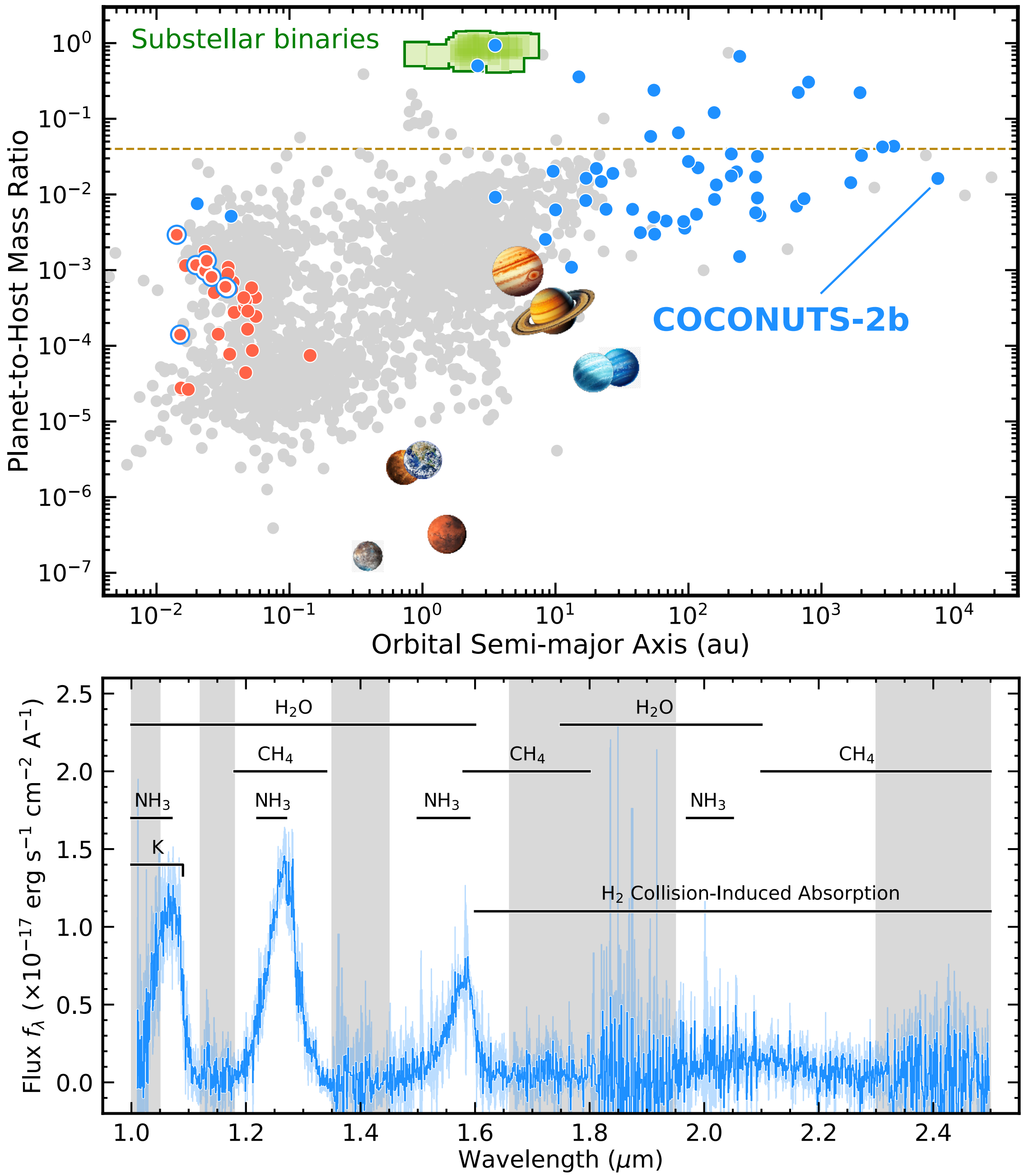

Figure 7: *Top*: Mass ratios of confirmed exoplanets as functions of their orbital separations (grey), with those having observed transmission and emission spectra highlighted in orange and blue, respectively. Substellar binaries with dynamical masses are shown in green. Solar system planets are plotted with sizes unscaled. Brown dashed lines highlight the planet mass of 13 $M_{\rm Jup}$ and the planet-to-host mass ratio of 0.04, as adopted by the IAU working definition of exoplanets. *Bottom*: Our Gemini/F2 spectrum of COCONUTS-2b with key spectral features labeled.

3 Jobs and Positions

2025 Trottier Postdoctoral Fellowship in Exoplanetary Science, Université de Montréal

Prof. René Doyon

Université de Montréal, Montréal, Canada, Starting date: May to September 2025

The Trottier Institute for Research on Exoplanets (IREx), affiliated with the Department of Physics of the Université de Montréal (UdeM), invites applications for the Trottier Postdoctoral Fellowship in experimental, observational or theoretical astrophysics applied to the study of exoplanets, which enables forefront independent research related to exoplanets. All areas of research related to exoplanets, related fields of astrophysics and astronomical instrumentation will be considered.

A PhD in physics, astronomy or related discipline is required at the time when the position starts. Preference will be given to applicants within 3 years of obtaining their PhD. Applicants with career interruptions due to parental, medical or family leaves, or other causes are invited to mention it in their cover letter if so desired. The position start date is between **May and September 2025**, and is for two years, renewable for a third year subject to performance and availability of funds.

Applicants should submit a cover letter (optional, max 1 page), a CV, a list of publications, and a statement of research interests (max 2 pages), and should arrange to have three referees send a letter of reference to **irex-applications@umontreal.ca by December 4, 2024, for full consideration**. This position will, however, remain open until filled.

IREx consists of a growing team of about 60 people working on a variety of observational, theoretical and instrumental projects related to the study of exoplanets and other related fields of astrophysics. They work within several research institutions located in Quebec, Canada (Université de Montréal, McGill University, Bishop's University, Montreal Planetarium of Space for Life, Université Laval). Our professors, researchers, and students are actively involved in large international projects related to the detection and characterisation of exoplanets, notably the James Webb Space Telescope, the SPIRou and NIRPS spectrographs, and have privileged access to time and data from these instruments.

IREx has also a vibrant science education and public outreach (EPO) program led by astrophysicists who are seasoned science communicators. We believe in the importance of training scientists who have exceptional scientific research skills, but also outstanding communication skills. All of our members are involved in bringing science to a wide audience in a variety of ways.

IREx advocates for diversity, inclusion and employment equity. We strongly encourage applications from women, visible and ethnic minorities, Indigenous people, persons with disabilities and people of all sexual orientations and gender identities to apply. With the support of our Equity, Diversity and Inclusion (EDI) Committee, we are committed to the professional integration of people from groups that are traditionally underrepresented in the physics research community.

More information on the position and on our institute and its members, our research programs, our EPO initiatives and our EDI efforts can be found on our website: https://exoplanetes.umontreal.ca/en.

Download/Website: `https://exoplanetes.umontreal.ca/en/emplois-formation/stages-postdoctoraux/`

Contact: `irex-applications@umontreal.ca`

Postdoctoral Research Associate in Planet Formation and Protoplanetary Disk Evolution

Richard P. Nelson
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About the Role
A postdoctoral researcher is being recruited to work with Prof. Richard Nelson on the formation of planets and the dynamical evolution of protoplanetary disks. The goal will be to build on the recent work of Dr. Alex Ziampras and Prof. Richard Nelson, which examines the migration of planets in modern protoplanetary disks models.
This position is funded by an STFC Consolidated Grant and will be supervised by Prof. Richard Nelson. The successful applicant will be a member of the Exoplanets and Planet Formation group within the Astronomy Unit at QMUL. The project will be supported by a generous allocation of computing time through STFC's DiRAC HPC systems, in addition to HPC resources provided by QMUL HPC cluster Apocrita.
About You
Candidates should have a PhD in a relevant discipline or will have obtained it by commencement of the position. Successful candidates will ideally have a background in research in protoplanetary disk/planet formation modelling using hydrodynamical and/or magneto-hydrodynamical simulations.
Prof Nelson and QMUL are committed to improving the diversity of the astrophysics community and particularly encourage applications from underrepresented groups.
Time frame
Further details are provided through the link below. The deadline for submission for applications is 25/11/2024. The position is open now and the start date will be as soon as possible after the appointment has been made.

Download/Website: `https://aas.org/jobregister/ad/c12658bf`

Contact: `R.P.Nelson@qmul.ac.uk`

125 Anniversary Fellows & Anniversary Chairs at the University of Birmingham

Amaury Triaud
Sun, Stars & Exoplanets research group, School of Physics & Astronomy

Deadline, 12 January 2025

To celebrate its 125th anniversary, the University of Birmingham is opening **125 new permanent academic positions** across all disciplines. There are two types of positions on offer, *Anniversary Fellows*, at the rank of assistant professor, and *Anniversary Chairs*, at the rank of professor.

The recruitment drive will last into 2026, and its first phase already recruited about 30 new positions. This particular call is the start of the second phase of recruitment, with a deadline on 12 January 2025.

The *Sun, Stars & Exoplanets* research group, within the School of Physics & Astronomy is very keen to attract excellent candidates to apply to this scheme, which when selected would expand and complement our research portfolio. While any research profile can apply to the Anniversary recruitment and is of interest to us, we feel the following areas have the greatest potential: **astronomical instrumentation related to exoplanets; direct imaging; observation and theory of exoplanet atmospheres; observations and theory related to young stars and protoplanetary discs; advanced statistics and machine learning applied to stellar astronomy**.

Information about the Anniversary scheme can be found at:
`https://fellowsandchairs.birmingham.ac.uk/`.

Because this is a centrally managed recruitment scheme, any application should show not just what a good scientist and future/established academic you are, but also include a strong motivation for your general research area, as well as a strong statement about what attracts you to join the *Sun, Stars & Exoplanets* research group. We strongly recommend candidates to reach out about those well ahead of the deadline.

Applications to the scheme should include:
- Details of three referees
- A 10,000 character statement that provide "your reasons for applying for this role, skills, experience, and other interests and activities as appropriate to the post for which you are applying".
- A CV and cover letter
- A list of publications

The School of Physics & Astronomy also particularly recommends to applicants, that they attach a research statement, and a teaching statement to their CV (roughly 2 pages each).

The School of Physics & Astronomy at the University of Birmingham has an outstanding track record of internationally recognised research. The 2013 Nobel Prize in Physics was awarded to Higgs and Englert for their theoretical prediction of the Higgs boson that was discovered in 2012 with strong involvement of the Birmingham team within the ATLAS experiment. The 2016 Nobel Prize in Physics was awarded to Professor Mike Kosterlitz and Professor David Thouless jointly for their work into the discoveries of the properties of matter, work which started when they were at Birmingham together. The 2017 Prize was awarded for the detection of gravitational waves, in which Birmingham staff played a key role; the University recognised these contributions and future major opportunities in the field by establishing the Institute for Gravitational Wave Astronomy. The School is an excellent environment for an upcoming academic. The School performed strongly in REF 2021, ranking first out of all Physics departments in the UK on 4-star research, and fourth overall on GPA.

The *Sun, Stars and Exoplanets* research group is one of its more successful groups, which currently holds two ERC, one FLF and three STFC grants for six permanent academics. The group has made unique and impactful research contributions in the fields of asteroseismology, helioseismology and exoplanet detections. In addition, the *Sun, Stars and Exoplanets* group has created a welcoming and inclusive environment for research, which is reflected within surveys of our PhD students and postdocs. The group is one of only few physics groups UK-wide that is gender-balanced at all seniority levels. Our website is `http://www.birmingham.ac.uk/sasp/`

For more information, please contact Amaury Triaud (see below).

Download/Website: `https://fellowsandchairs.birmingham.ac.uk/`

Download/Website: `https://www.jobs.ac.uk/job/DKG958/anniversary-fellow`

Download/Website: `https://www.jobs.ac.uk/job/DKG952/anniversary-chair`

Contact: `a.triaud@bham.ac.uk`

Postdoctoral Positions in Star-Exoplanet connections at Leiden Observatory

Prof A. A. Vidotto

Leiden University, Netherlands, Start: preferably before 1 September 2025

Leiden Observatory invites applications for up to 2 postdoctoral positions to join the group of Aline Vidotto, whose research ranges from stellar outflows (stellar winds, coronal mass ejections), exoplanetary outflows (bulk atmospheric escape), magnetism (stellar and planetary), with a focus on star-planet interactions. For this position, we are particularly welcoming applicants with experience in numerical modelling, preferably associated to any of the topics aforementioned.

Interested candidates should upload their applications by **8 December 2024**. The application should contain a cover letter, CV, publication list, and a statement of research experience and future research interests (2-3 pages). Please mention how the candidate's past experience and his/her/their skills could complement the research carried out in Vidotto's research group. Candidates should arrange for three reference letters to be submitted before the indicated deadline. Referees can only submit their letters after receipt of an email by the submission system. This is initiated by the applicant. The applicant should register early and start this process.

The position is funded for 4 years, consisting of an initial appointment of 2 years plus an extension of 2 years contingent on satisfactory performance. Starting date is negotiable, but preferably before 1 September 2025. For more information about the position and how to apply, please visit the link below.

Leiden Observatory is a lively world-class university astronomy department that covers a wide range of science. We are the largest astronomy department in the Netherlands, with about 35 faculty members, 40 postdoctoral researchers, 30 support staff, 70 PhD students and 100 MSc students. Leiden itself, is a charming university town with international flair with easy connections to other European countries.

Leiden Observatory is dedicated to providing an inclusive, equitable, and supportive environment for everyone.

Benefits: Salary ranges from 4,020 to 5,278 Euros euros gross per month based on a full time employment (38 hours/week, pay scale 10 in accordance with the Collective Labour Agreement for Dutch Universities). Leiden University offers an attractive benefits package with additional holiday allowance and end-of-year bonus (8% and 8.3% of annual income, respectively), training and career development, paid vacation, sick leave, disability insurance, maternity and parental leave, and retirement benefits. Candidates from outside the Netherlands may be eligible for a substantial tax break. Compulsory medical insurance is not included (on average 150 euro/month/adult).

Download/Website: `https://edu.nl/n9ckg`

Contact: `vidotto@strw.leidenuniv.nl`

4 Conferences and Workshops

Exoclimes VII

Romain Allart, Frédérique Baron, Lisa Dang, René Doyon
Département de Physique, Institut Trottier de Recherche sur les Exoplanètes, Université de Montréal, Montréal, Québec, H3T 1J4, Canada

Université de Montréal, 7-11 July 2025

We are excited to announce that the Exoclimes VII conference will be organized by the Trottier Institute for Research in Exoplanets (https://exoplanetes.umontreal.ca/en/) and held in Montréal (Canada) from July 7 to 11, 2025. To maintain the collaborative spirit of Exoclimes, the number of participants will be limited to 200. Exoclimes is a conference series devoted to the atmosphere, climate, and evolution of sub-stellar bodies from solar system worlds to exoplanets and brown dwarfs. It began at Exeter in 2010 and is coming back with a 7th edition.
Alongside this year's Exoclimes conference, we will be holding a summer school program (ExoSLAM) for early career researchers and those new to the field of atmosphere and climate sciences, focusing on observations. ExoSLAM (Exoclimes Summer School on Atmospheres and Modelling) will run from 3-5 July 2025 before the conference and will be open to up to 50 participants.
If you would like to receive further communications about this upcoming meeting, please fill out this interest form (https://forms.gle/WDhhYQb9rCibDy6z9). This will also help the LOC gauge the enthusiasm around the conference and the needs of potential attendees.
Let me know if you have any questions!
We look forward to seeing you in Montréal, The Exoclimes VII and ExoSLAM local organizing committees

Download/Website: https://exoclimes.org/about.html

Contact: romain.allart@umontreal.ca; kha.han.lisa.dang@umontreal.ca

Gas Accretion in Planet formation (GAP) Conference

***Jun Hashimoto**, Yuhiko Aoyama, Ruobing Dong, Haochang Jiang, Gabriel-Dominique Marleau*

Max-Planck-Institut für Astronomie (MPIA), Heidelberg (Germany), 10–12 March 2025

Dear colleagues,

It is our pleasure to invite submissions to the following conference on "Gas Accretion in Planet formation".

Rationale: The most direct approach to studying the planet formation process is to identify and characterize young, forming planets still embedded in protoplanetary disks. The final stages of gas giant planet formation are influenced by the gas supply from the disk. Additionally, these studies offer insights into the relationship with isolate planetary-mass/brown-dwarf/very-low-mass-star accretors and wide-orbit planets/companions that are not embedded within disks.

The **aim** of this meeting is to bring together researchers to discuss current understanding of gas accretion during planet formation and to explore future directions in this field.

The meeting will be held **in person** at the Max-Planck-Institut für Astronomie (MPIA) in Heidelberg, Germany, from Monday, 10 March 2025 at 10:00 AM until Wednesday, 12 March 2025 around 2:00 PM.

Due to the capacity of the conference room, the number of attendees is limited to 75. There will be talks and posters, with multiple poster submissions per person possible.

Important dates

- Deadline for **abstract submission** and **registration**: **8 December 2024**
- Program release: Middle of December 2024
- Meeting dates: 10–12 March 2025

We hope we will be "a-greeting" you at this meeting!

Download/Website: `https://sites.google.com/view/gapconference1`

Contact: `soc-gap2025@googlegroups.com`

Pebbles in Planet Formation

M. Tatsuuma[1], *A. Kataoka*[2], *Y. Shibaike*[2], *T. Omura*[3], *R. Tominaga*[4], *K. Doi*[5], *N. Kitade*[2]
[1] RIKEN iTHEMS
[2] National Astronomical Observatory of Japan
[3] Osaka Sangyo Univ.
[4] Institute of Science Tokyo
[5] Max Planck Institute for Astronomy

NAOJ Mitaka campus, Tokyo, Japan and Online, 10-13 February 2025

Research on planet formation involves various approaches, including explorations of small solar system bodies, observations of protoplanetary disks, dust experiments, simulations, and theoretical studies. One of the primary objectives in this field is to develop a comprehensive theory that explains how kilometer-sized planetesimals form from micrometer-sized dust grains, drawing upon findings from these diverse research methods.

This workshop will focus on the concept of pebbles, which play a crucial role in the planet formation process. Pebbles — typically defined as solids ranging from millimeter to centimeter in size — are intermediate building blocks in planet formation, though their definition varies depending on the context. Assuming pebbles has led to theoretical advances in mechanisms such as streaming instability and pebble accretion, which promote the formation and growth of planetesimals. Additionally, pebbles have been linked to barriers against dust growth, such as the bouncing barrier. Furthermore, observations of protoplanetary disks have revealed the size distribution and porosity of solids, while the strength and thermal conductivity of comets obtained by the Rosetta mission suggest the accumulation of pebbles due to disk instabilities. However, inconsistencies have been pointed out between pebble formation and theories of dust growth.

This workshop aims to revisit and refine our understanding of solid materials implicated in planet formation, particularly in light of findings from solar system explorations and protoplanetary disk observations. We aim to reevaluate the definition and role of pebbles in the broader context of planet formation, with a special focus on the current challenges and open questions in the field. The workshop will include discussions of experiments and simulations of dust growth and collisions, and planetesimal formation mechanisms such as streaming instability. The workshop features keynote talks from the perspectives of explorations, observations, experiments, simulations, and theories, and we also call for presentations on related topics.

Abstract submission deadline: Dec 10, 2024

Download/Website: `https://indico2.riken.jp/event/5012/`

Contact: `ppf2025-contact@ml.riken.jp`

5 As seen on astro-ph

The following list contains exoplanet related entries appearing on astro-ph in October 2024.
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.

October 2024

astro-ph/2410.00043: **Rate-induced biosphere collapse in the Daisyworld model** *by Constantin W. Arnscheidt, Hassan Alkhayuon*

astro-ph/2410.00213: **The Compositions of Rocky Planets in Close-in Orbits Tend to be Earth-Like** *by Casey L. Brinkman et al.*

astro-ph/2410.00156: **JWST imaging of edge-on protoplanetary disks. III. Drastic morphological transformation across the mid-infrared in Oph163131** *by Marion Villenave et al.*

astro-ph/2410.00093: **Planetary population synthesis** *by Remo Burn, Christoph Mordasini*

astro-ph/2410.00136: **JWST captures a sudden stellar outburst and inner disk wall destruction** *by Chengyan Xie et al.*

astro-ph/2410.00856: **Exploring the catastrophic regime: thermodynamics and disintegration in head-on planetary collisions** *by Jingyao Dou et al.*

astro-ph/2410.00800: **The obliquity and atmosphere of the hot Jupiter WASP-122b (KELT-14b) with ESPRESSO: An aligned orbit and no sign of atomic or molecular absorption** *by M. Stangret et al.*

astro-ph/2410.00641: **The Dynamical History of HIP-41378 f – Oblique Exorings Masquerading as a Puffy Planet** *by Tiger Lu et al.*

astro-ph/2410.00739: **Tidal evolution of Earth-like planets in the habitable zone of low-mass stars** *by E. F. S. Valente et al.*

astro-ph/2410.00577: **A sub-Earth-mass planet orbiting Barnard's star: No evidence of transits in TESS photometry** *by A. K. Stefanov et al.*

astro-ph/2410.00569: **A sub-Earth-mass planet orbiting Barnard's star** *by J. I. Gonzalez Hernandez et al.*

astro-ph/2410.00374: **Planet-disk interaction and evolution** *by Pablo Benítez-Llambay*

astro-ph/2410.01923: **On the early thermal processing of planetesimals during and after the giant planet instability** *by A. Gkotsinas et al.*

astro-ph/2410.02051: **TESS Asteroseismic Masses and Radii of Red Giants with (and without) Planets** *by Myles Pope et al.*

astro-ph/2410.01559: **Generating X-ray transit profiles with batman** *by George W. King et al.*

astro-ph/2410.01418: **Volatile composition of the HD 169142 disk and its embedded planet** *by Luke Keyte et al.*

astro-ph/2410.01625: **A Fourth Planet in the Kepler-51 System Revealed by Transit Timing Variations** *by Kento Masuda et al.*

astro-ph/2410.02928: **The Outcome of Collisions between Gaseous Clumps formed by Disk Instability** *by Yoav Matzkevich et al.*

astro-ph/2410.02893: **The assembly, characterization, and performance of SISTINE** *by Nicholas Nell et al.*

astro-ph/2410.02856: **On the origin of transition disk cavities: Pebble-accreting protoplanets vs Super-Jupiters** *by Shuo Huang et al.*

astro-ph/2410.02573: **BEBOP VI. Enabling the detection of circumbinary planets orbiting double-lined binaries with the DOLBY method of radial-velocity extraction** *by Lalitha Sairam et al.*

astro-ph/2410.02194: **Polarized Signatures of the Earth Through Time: An Outlook for the Habitable Worlds Observatory** *by Kenneth E. Goodis Gordon et al.*

astro-ph/2410.02150: **Evidence that Planets in the Radius Gap Do Not Resemble Their Neighbors** *by Quadry Chance, Sarah Ballard*

astro-ph/2410.02672: **Leaning Sideways: VHS 1256-1257 b is a Super-Jupiter with a Uranus-like Obliquity** *by Michael Poon et al.*

astro-ph/2410.03932: **The Search for Disk Perturbing Planets Around the Asymmetrical Debris Disk System HD 111520 Using REBOUND** *by Katie A. Crotts, Brenda C. Matthews*

astro-ph/2410.03874: **A differentiable N-body code for transit timing and dynamical modelling – II. Photodynamics** *by Zachary Langford, Eric Agol*

astro-ph/2410.03823: **High Resolution ALMA Observations of Richly Structured Protoplanetary Disks in σ Orionis** *by Jane Huang et al.*

astro-ph/2410.03527: **JWST/NIRISS reveals the water-rich "steam world" atmosphere of GJ 9827 d** *by Caroline Piaulet-Ghorayeb et al.*

astro-ph/2410.03491: **The Feasibility of Asynchronous Rotation via Thermal Tides for Diverse Atmospheric Compositions** *by Andrea M. Salazar, Robin Wordsworth*

astro-ph/2410.03288: **Novel Constraints on Companions to the Helix Nebula Central Star** *by Leyla Iskandarli et al.*

astro-ph/2410.03228: **sunset: A database of synthetic atmospheric-escape transmission spectra for nearly every transiting planet** *by Dion Linssen et al.*

astro-ph/2410.03101: **Constraining the Presence of Companion Planets in Hot Jupiter Planetary System Using TTV Observation from TESS** *by Zixin Zhang et al.*

astro-ph/2410.03449: **A General, Differentiable Transit Model for Ellipsoidal Occulters: Derivation, Application, and Forecast of Planetary Oblateness and Obliquity Constraints with JWST** *by Shashank Dholakia et al.*

astro-ph/2410.04079: **Uncertainties of the dust grain size in protoplanetary disks retrieved from millimeter continuum observations** *by Dafa Li et al.*

astro-ph/2410.04470: **Breaking degeneracies in exoplanetary parameters through self-consistent atmosphere-interior modelling** *by Christian Wilkinson et al.*

astro-ph/2410.04588: **Frequency Comb Calibrated Laser Heterodyne Radiometry for Precision Radial Velocity Measurements** *by Ryan K. Cole et al.*

astro-ph/2410.05537: **The Polar Vortex Hypothesis: Evolving, Spectrally Distinct Polar Regions Explain Short- and Long-term Light Curve Evolution and Color-Inclination Trends in Brown Dwarfs and Giant Exoplanets** *by Nguyen Fuda, Dániel Apai*

astro-ph/2410.05523: **Multiwavelength Campaign Observations of a Young Solar-type Star, EK Draconis. II. Understanding Prominence Eruption through Data-Driven Modeling and Observed Magnetic Environment** *by Kosuke Namekata et al.*

astro-ph/2410.05482: **Mind the kinematics simulation of planet-disk interactions: time evolution and numerical resolution** *by Kan Chen, Ruobing Dong*

astro-ph/2410.05408: **A long spin period for a sub-Neptune-mass exoplanet** *by Ellen M. Price et al.*

astro-ph/2410.05373: **Surprising Spin-orbit Resonances of Rocky Planets** *by Henry Yuan et al.*

astro-ph/2410.04856: **Gen TSO: A General JWST Simulator for Exoplanet Times-series Observations** *by Patricio E. Cubillos*

astro-ph/2410.04804: **Constraining Planetary Albedo of JWST Targets in the TESS bandpass, using TESS, HST and Spitzer Eclipse Depth Observations** *by Rahul Arora, Jayesh Goyal*

astro-ph/2410.04726: **The Solar Neighborhood LII: M Dwarf Twin Binaries – Presumed Identical Twins Appear Fraternal in Variability, Rotation, Hα, and X-rays** *by Andrew A. Couperus et al.*

astro-ph/2410.05208: **Polar alignment of a dusty circumbinary disc – II. Application to 99 Herculis** *by Jeremy L. Smallwood et al.*

astro-ph/2410.06335: **Constraints on Remnant Planetary Systems as a Function of Main-Sequence Mass with HST/COS** *by Lou Baya Ould Rouis et al.*

astro-ph/2410.06310: **An Alternating Minimization Algorithm with Trajectory for Direct Exoplanet Detection – The AMAT Algorithm** *by Hazan Daglayan et al.*

astro-ph/2410.06246: **Ages of Stars and Planets in the Kepler Field Younger Than Four Billion Years** *by Luke G. Bouma et al.*

astro-ph/2410.06207: **Dust Drift Timescales in Protoplanetary Disks at the Cusp of Gravitational Instability** *by Jonathan P. Williams et al.*

astro-ph/2410.06248: **Exocomets, exoasteroids and exomoons** *by Paul A. Strøm*

astro-ph/2410.05633: **Outbursts Upon Cooling of Low-Temperature Binary Mixtures: Experiments and Their Planetary Implications** *by S. M. Raposa et al.*

astro-ph/2410.05654: **Gaia-4b and 5b: Radial Velocity Confirmation of Gaia Astrometric Orbital Solutions Reveal a Massive Planet and a Brown Dwarf Orbiting Low-mass Stars** *by Gudmundur Stefansson et al.*

astro-ph/2410.05978: **Probabilistic programming methods for reconstruction of multichannel imaging detector events: ELVES and TRACK** *by S. A. Sharakin, R. E. Saraev*

astro-ph/2410.07425: **TIC 393818343 c: Discovery and characterization of a Neptune-like planet in the Delphinus constellation** *by G. Conzo et al.*

astro-ph/2410.07313: **Considerations for Photochemical Modeling of Possible Hycean Worlds** *by Gregory J. Cooke, Nikku Madhusudhan*

astro-ph/2410.07100: **Chemical composition of planetary hosts: C, N, and α-element abundances** *by A. Sharma et al.*

astro-ph/2410.07047: **Effects from different grades of stickiness between icy and silicate particles on carbon depletion in protoplanetary disks** *by Tamami Okamoto, Shigeru Ida*

astro-ph/2410.06922: **Estimating Exoplanet Mass using Machine Learning on Incomplete Datasets** *by Florian Lalande et al.*

astro-ph/2410.07285: **Impact of Exoplanet Science on Society: Professional Contributions, Citizen Science Engagement and Public Perception** *by H. J. Deeg*

astro-ph/2410.06804: **The Clear Sky Corridor: Insights Towards Aerosol Formation in Exoplanets Using An AI-based Survey of Exoplanet Atmospheres** *by Reza Ashtari et al.*

astro-ph/2410.06900: **Differentiable Modeling of Planet and Substellar Atmosphere: High-Resolution Emission, Transmission, and Reflection Spectroscopy with ExoJAX2** *by Hajime Kawahara et al.*

astro-ph/2410.08149: **JWST-TST DREAMS: A Super-Solar Metallicity in WASP-17 b Dayside Atmosphere from NIRISS SOSS Eclipse Spectroscopy** *by Amélie Gressier et al.*

astro-ph/2410.08347: **Thousands of planetesimals: Simulating the streaming Instability in very large computational domains** *by Urs Schäfer et al.*

astro-ph/2410.08178: **The mystery of water in the atmosphere of τ Boötis b continues: insights from revisiting archival CRIRES observations** *by Vatsal Panwar et al.*

astro-ph/2410.08148: **JWST-TST DREAMS: Non-Uniform Dayside Emission for WASP-17b from MIRI/LRS** *by Daniel Valentine et al.*

astro-ph/2410.07636: **A regularisation technique to precisely infer limb darkening using transit measurements: can we estimate stellar surface magnetic fields?** *by Kuldeep Verma et al.*

astro-ph/2410.08253: **SETI in 2022** *by Jason T. Wright et al.*

astro-ph/2410.08055: **Chapter 10031. Surfaces and Interiors** *by Lena Noack et al.*

astro-ph/2410.07977: **An extremely low-density exoplanet spins slow** *by Quanyi Liu et al.*

astro-ph/2410.08116: **BOWIE-ALIGN: JWST reveals hints of planetesimal accretion and complex sulphur chemistry in the atmosphere of the misaligned hot Jupiter WASP-15b** *by James Kirk et al.*

astro-ph/2410.09159: **Formation of Jupiter-Mass Binary Objects through photoerosion of fragmenting cores** *by Jessica L. Diamond, Richard J. Parker*

astro-ph/2410.09042: **Hidden under a warm blanket: If planets existed in protostellar disks, they would hardly produce observable substructures** *by P. Nazari et al.*

astro-ph/2410.08943: **BD+44 493: Chemo-Dynamical Analysis and Constraints on Companion Planetary Masses from WIYN/NEID Spectroscopy** *by Vinicius M. Placco et al.*

astro-ph/2410.09183: **Starshade Exoplanet Data Challenge: What We Learned** *by Mario Damiano et al.*

astro-ph/2410.08881: **Atmospheric escape in hot Jupiters under sub-Alfvénic interactions** *by Andrés Presa et al.*

astro-ph/2410.08577: **Assessing Core-Powered Mass Loss in the Context of Early Boil-Off: Minimal Long-Lived Mass Loss for the Sub-Neptune Population** *by Yao Tang et al.*

astro-ph/2410.09147: **A Candidate High-Velocity Exoplanet System in the Galactic Bulge** *by Sean K. Terry et al.*

astro-ph/2410.08685: **Solid-liquid phase change in planetary cores** *by Ludovic Huguet et al.*

astro-ph/2410.08716: **The evolutionary history of GD1400, a white dwarf-brown dwarf binary** *by S. L. Casewell et al.*

astro-ph/2410.09981: **Atmospheric characterisation of GJ1214b from transit and eclipse observations** *by Panayotis Lavvas et al.*

astro-ph/2410.10000: **JWST/NIRSpec Observations of Brown Dwarfs in the Orion Nebula Cluster** *by K. L. Luhman et al.*

astro-ph/2410.11138: **Sulfur in the Giant Planets, their Moons, and Extrasolar Gas Giant Planets** *by Katharina Lodders, Bruce Fegley*

astro-ph/2410.11060: **Out of the Darkness: High-resolution Detection of CO Absorption on the Nightside of WASP-33b** *by Georgia Mraz et al.*

astro-ph/2410.11054: **An HST Transmission Spectrum of the Closest M-Dwarf Transiting Rocky Planet LTT 1445Ab** *by Katherine A. Bennett et al.*

astro-ph/2410.11048: **Hot Rocks Survey I : A shallow eclipse for LHS 1478 b** *by Prune C. August et al.*

astro-ph/2410.11037: **TESS Giants Transiting Giants. VII. A Hot Saturn Orbiting an Oscillating Red Giant Star** *by Nicholas Saunders et al.*

astro-ph/2410.10987: **The Thermal Emission Spectrum of the Nearby Rocky Exoplanet LTT 1445A b from JWST MIRI/LRS** *by Patcharapol Wachiraphan et al.*

astro-ph/2410.10968: **Streaming instabilities in accreting protoplanetary disks: A parameter study** *by Shiang-Chih Wang, Min-Kai Lin*

astro-ph/2410.10969: **Hic Sunt Dracones: Uncovering Dynamical Perturbers Within the Habitable Zone** *by Stephen R. Kane, Jennifer A. Burt*

astro-ph/2410.10939: **Disequilibrium Chemistry, Diabatic Thermal Structure, and Clouds in the Atmosphere of COCONUTS-2b** *by Zhoujian Zhang et al.*

astro-ph/2410.10943: **Spin and Obliquity Evolution of Hot Jupiter Hosts from Resonance Locks** *by J. J. Zanazzi, Eugene Chiang*

astro-ph/2410.10820: **High-resolution transmission spectroscopy of the hot-Saturn HD 149026b** *by Federico Biassoni et al.*

astro-ph/2410.11643: **Spectroscopically resolved partial phase curve of the rapid heating and cooling of the highly-eccentric Hot Jupiter HAT-P-2b with WFC3** *by Bob Jacobs et al.*

astro-ph/2410.10406: **Candidates for Substellar Members of the Orion Nebula Cluster from JWST/NIRCam** *by K. L. Luhman*

astro-ph/2410.10197: **Photochemical Hazes in Exoplanetary Skies with Diamonds: Microphysical Modeling of Haze Composition Evolution via Chemical Vapor Deposition** *by Kazumasa Ohno*

astro-ph/2410.10186: **A Possible Metal-Dominated Atmosphere Below the Thick Aerosols of GJ 1214 b Suggested by its JWST Panchromatic Transmission Spectrum** *by Kazumasa Ohno et al.*

astro-ph/2410.10183: **Possible Carbon Dioxide Above the Thick Aerosols of GJ 1214 b** *by Everett Schlawin et al.*

astro-ph/2410.10933: **Water depletion and 15NH3 in the atmosphere of the coldest brown dwarf observed with JWST/MIRI** *by H. Kühnle et al.*

astro-ph/2410.11401: **Planetary Mass Determinations from a Simplified Photodynamical Model – Application To The Complete Kepler Dataset** *by Aviv Ofir et al.*

astro-ph/2410.11424: **Radial velocity technique** *by Trifon Trifonov*

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