ExoPlanet News
An Electronic Newsletter

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Contents

1 Editorial

Welcome to Edition 174 and the last issue of 2023 for 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!

At the end of the year, we can report that this newsletter has reached an all-time high **with over 1700 subscribers.**

Also for 2024 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 (`http://nccr-planets.ch/exoplanetnews/`).

The next issue will appear on January 12, 2024.

Thanks again for your support, happy holidays and all the best for 2024 from the editorial team,

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

2 Abstracts of refereed papers

Confirmation of TiO absorption and tentative detection of MgH and CrH in the atmosphere of HAT-P-41b

C. Jiang[1,2], *G. Chen*[1,3], *F. Murgas*[4,5], *E. Pallé*[4,5], *H. Parviainen*[4,5], *Y. Ma*[1]

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[4] Instituto de Astrofísica de Canarias (IAC), Vía Láctea s/n, 38205 La Laguna, Tenerife, Spain
[5] Departamento de Astrofísica, Universidad de La Laguna (ULL), C/ Padre Herrera, 38206 La Laguna, Tenerife, Spain

Astronomy & Astrophysics, in press (arXiv:2311.13840)

Understanding the role of optical absorbers is critical for linking the properties of the day-side and terminator atmospheres of hot Jupiters. This study aims to identify the signatures of optical absorbers in the atmosphere of the hot Jupiter HAT-P-41b. We conducted five transit observations of this planet to obtain its optical transmission spectra using the Gran Telescopio Canarias (GTC). We performed atmospheric retrievals assuming free abundances of 12 chemical species. Our Bayesian model comparisons revealed strong evidence for TiO absorption ($\Delta \ln \mathcal{Z} = 21.02$), modest evidence for CrH ($\Delta \ln \mathcal{Z} = 3.73$), and weak evidence for MgH ($\Delta \ln \mathcal{Z} = 2.32$). When we combined the GTC transmission spectrum with previously published Hubble Space Telescope (HST) and Spitzer data, the retrieval results and model inferences remained consistent. In conclusion, HAT-P-41b has a metal-rich atmosphere with no high-altitude clouds or hazes. Further observations of its day-side atmosphere should be made to confirm the hints of a thermal inversion in the upper atmosphere suggested by our results.

Download/Website: `https://arxiv.org/abs/2311.13840`

Contact: `czjiang@pmo.ac.cn`

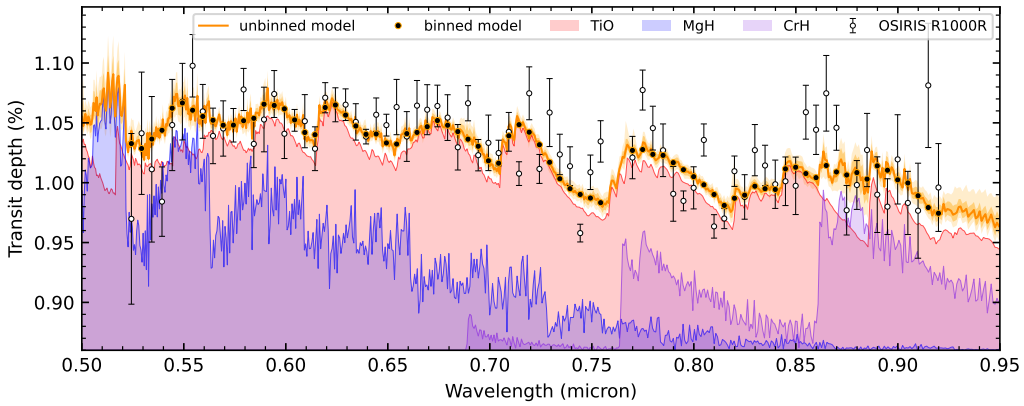

Figure 1: Retrieved transmission spectrum of HAT-P-41b observed with GTC OSIRIS. The error bars are the averaged OSIRIS transmission spectrum. The orange lines are the median and 2σ credible intervals of the posterior models. The black dots are the posterior model after wavelength binning to the observational passbands. The shaded regions below the posterior model indicate the reference models with only TiO (red), MgH (blue), or CrH (purple), respectively.

Large Exomoons unlikely around Kepler-1625 b and Kepler-1708 b

René Heller[1]*, Michael Hippke*[2,3]

[1] Max Planck Institute for Solar System Research, Justus-von-Liebig-Weg 3, 37077 Göttingen, Germany
[2] Sonneberg Observatory, Sternwartestraße 32, 96515 Sonneberg, Germany
[3] Visiting Scholar, Breakthrough Listen Group, Berkeley SETI Research Center, Astronomy Dept., UC Berkeley, USA

Nature Astronomy, published (https://arxiv.org/abs/2312.03786)

There are more than 200 moons in our Solar System, but their relatively small radii make similarly sized extrasolar moons very hard to detect with current instruments. The best exomoon candidates so far are two nearly Neptune-sized bodies orbiting the Jupiter-sized transiting exoplanets Kepler-1625 b and Kepler-1708 b, but their existence has been contested. Here we reanalyse the Hubble and Kepler data used to identify the two exomoon candidates employing nested sampling and Bayesian inference techniques coupled with a fully automated photodynamical transit model. We find that the evidence for the Kepler-1625 b exomoon candidate comes almost entirely from the shallowness of one transit observed with Hubble. We interpret this as a fitting artifact in which a moon transit is used to compensate for the unconstrained stellar limb darkening. We also find much lower statistical evidence for the exomoon candidate around Kepler-1708 b than previously reported. We suggest that visual evidence of the claimed exomoon transits is corrupted by stellar activity in the Kepler light curve. Our injection-retrieval experiments of simulated transits in the original Kepler data reveal false positive rates of 10.9 % and 1.6 % for Kepler-1625 b and Kepler-1708 b, respectively. Moreover, genuine transit signals of large exomoons would tend to exhibit much higher Bayesian evidence than these two claims. We conclude that neither Kepler-1625 b nor Kepler-1708 b are likely to be orbited by a large exomoon.

Download/Website: `https://www.nature.com/articles/s41550-023-02148-w`

Contact: `heller@mps.mpg.de`

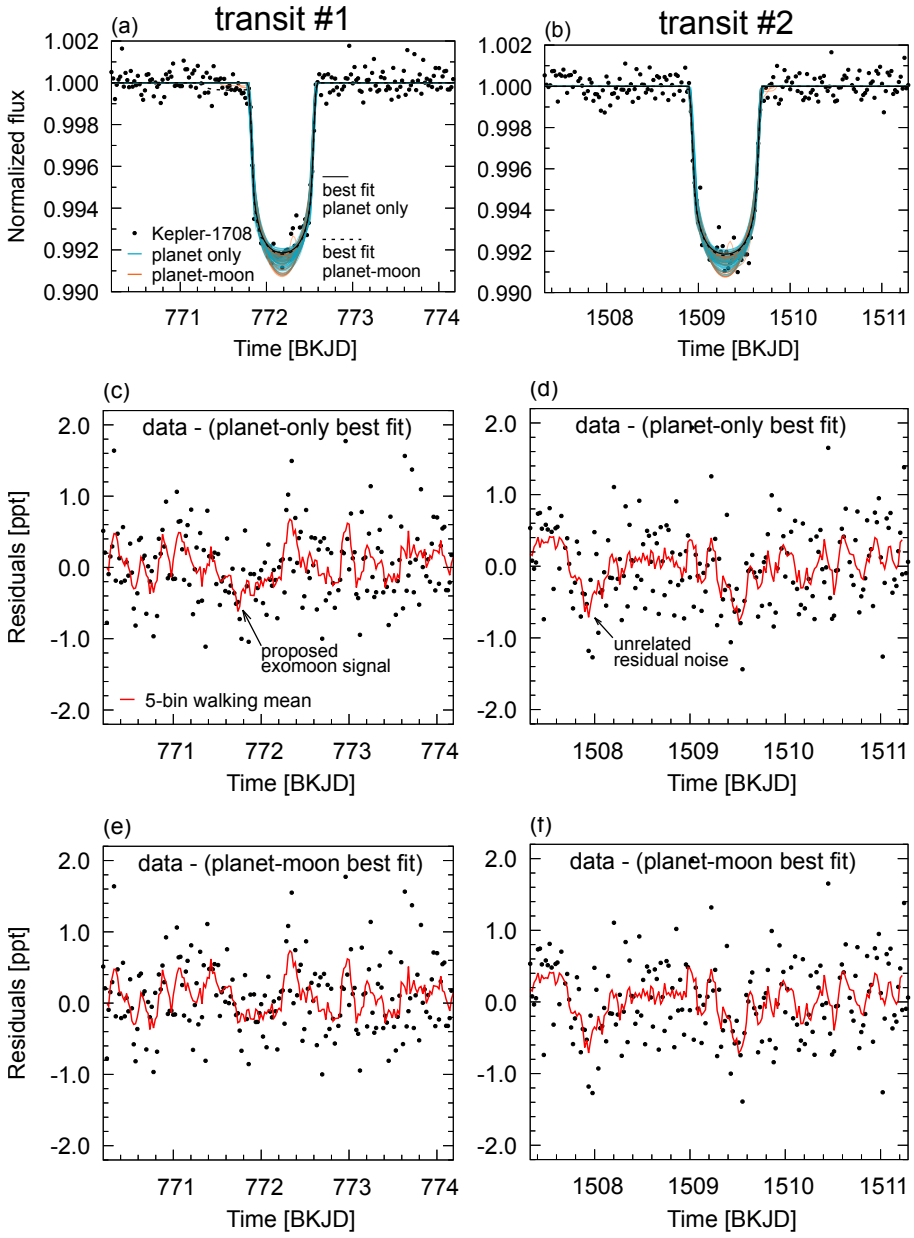

Figure 2: Transit light curves of Kepler-1708 b. The out-of-Hill-sphere parts of the Kepler-1708 b transit light curves were detrended using a biweight filter and the LDCs were used as free fitting parameters. (a)–(b) Blue and orange lines visualize 67 planet-only models and 33 planet-moon models, respectively, that were randomly drawn from the respective posterior distributions for transit 1 (a) and transit 2 (b). The number of light curves represents the corresponding Bayes factor of $B_{\rm mp} = 0.5$, which means that the planet-only interpretation is twice as probable as the planet-moon interpretation. The best-fitting models of a planet only and of a planet with a moon are shown with dashed and solid black lines, respectively. (c)–(d) Residuals of the observed data and the best fit of the planet-only model for transit 1 (c) and transit 2 (d). Red lines denote the five-bin walking mean. (e)–(f) Residuals of the observed data and the best fit of the planet-moon model for transit 1 (e) and transit 2 (f). ppt, parts per thousand.

Saltire - A model to measure dynamical masses for high-contrast binaries and exoplanets with high-resolution spectroscopy.

D. Sebastian[1], *A. H.M.J. Triaud*[1], *M. Brogi*[2,3,4]

[1] School of Physics & Astronomy, University of Birmingham, Edgbaston, Birmimgham, B15 2TT, UK
[2] Dipartimento di Fisica, Università degli Studi di Torino, via Pietro Giuria 1, I-10125 Torino, Italy
[3] Department of Physics, University of Warwick, Coventry CV4 7AL, UK
[4] INAF-Osservatorio Astrofisico di Torino, Via Osservatorio 20, I-10025 Pino Torinese, Italy

Monthly Notices of the Royal Astronomical Society, in press (arxiv:2312.01924)

High-resolution cross-correlation methods are widely used to discover and to characterise atomic and molecular species in exoplanet atmospheres. The characteristic cross-correlation signal is typically represented as a function of the velocity of the system, and the semi-amplitude of the planet's orbit. We present `Saltire`, a fast and simple model that accurately reproduces the shape of such cross-correlation signals, allowing a direct fit to the data by using a minimum set of parameters. We show how to use this model on the detection of atmospheric CO in archival data of the hot Jupiter τ Boötis b, and how `Saltire` can be used to estimate the semi-amplitude and rest velocity of high brightness-ratio binaries. By including the shape of the signal, we demonstrate that our model allows to robustly derive the signal position up to 10 times more accurate, compared to conventional methods. Furthermore, we discuss the impact of correlated noise and demonstrate that `Saltire` is a robust tool for estimating systematic uncertainties on the signal position. `Saltire` opens a new door to analyse high signal-to-noise data to accurately study atmospheric dynamics and to measure precise dynamical masses for exoplanets and faint stellar companions. We show, that the phase-resolved shape of the atmospheric CCF signal can accurately be reproduced, allowing studies of phase-dependent signal changes and to disentangle them from noise and data aliases.

Download/Website: `https://arxiv.org/abs/2312.01924`

Contact: `D.Sebastian.1@bham.ac.uk`

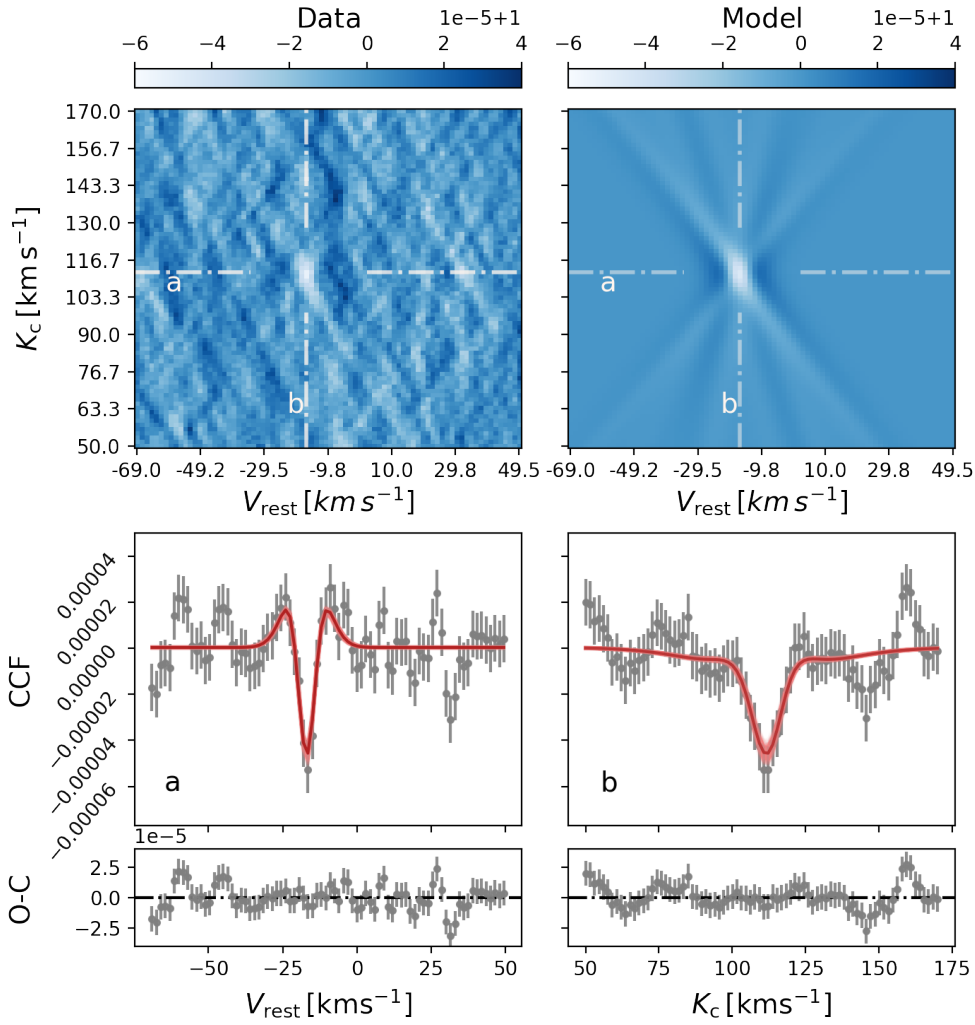

Figure 3: `Saltire` fit to the detection signal of CO in the atmosphere of τ Boötis b. Upper left: Map of Cross-correlation function (CCF), Upper right: `Saltire` best fitting model with expected signal shape. Dashed lines indicate the position of maximum CO signal. The line labels (a,b) indicate the slices - shown in the lower panels - for clarity; Lower panels: Slices (a,b) trough the CCF map at maximum CO signal for both axis. Grey dots: CCF-map data and residual data (lower panel). Error-bars represent the noise parameter, derived from MCMC sampling; Red line: best `Saltire` model fit; Red shaded lines: `Saltire` models from posterior samples.

3 Jobs and Positions

Postdoctoral position on star-planet magnetic interactions

Antoine Strugarek

CEA Paris-Saclay, France, position can start from June 1st 2023

We invite applications for a 4 years post-doctoral position in global MHD modelling of star-planet magnetic interactions and development of a synthetic analysis pipeline SPIE, to work with Dr. Antoine Strugarek (CEA Paris-Saclay, France).
The position is funded through the ERC ExoMagnets program. The hired postdoc researcher will be expected to

- Develop 3D global numerical models of star-planet magnetic interactions taking into account a self-consistent planetary, non-fully ionised atmospheric escape.
- Develop a synthetic emission pipeline SPIE to predict the multi-wavelength signal expected from star-planet magnetic interactions.
- Lead the writing and publication process of scientific papers and the presentation of the results in national and international conferences

Applicants should have a PhD in astrophysics or plasma physics by the time they start this postdoctoral position. The applicants should have an outstanding record of research and publications, some experience in managing small scientific projects on their own, and real interest in computational astrophysics and applied mathematics.
Applications are expected to be received before the 1st of February 2024. The position will be awarded by mid-march 2024, and the selected candidate could start their position starting from June 2024.
To apply, please send a resume, list of publications, statement of research interests and experience, and arrange for at least two letters of reference to be sent to Dr Antoine Strugarek.

Download/Website: `https://tonione.github.io/antoinestrugarek.github.io/jobad_SPIE.html`

Contact: `antoine.strugarek@cea.fr`

Postdoctoral position in dynamo action in Earth-like exoplanets on short-period orbit

Antoine Strugarek

CEA Paris-Saclay, France, position should start before September 30th 2023

We invite applications for a 2 years post-doctoral position in large-scale MHD modelling of dynamo action in Earth-like exoplanets with short-period orbit, to work with Dr. Antoine Strugarek (DAp-AIM, CEA) and Dr. Christophe Le Poncin-Lafitte (SYRTE, Observatoire de Paris).
The position is funded through the DIM Origines program. The hired postdoc researcher will be expected to

- Develop 3D numerical models of dynamo action in the internal layers of an Earth-like planet bathing in a strong ambient magnetic field.
- Implement planetary dynamo scaling-laws in the secular evolution ESPEM code, to model planet migration on close-in orbits due to magnetic torques.
- Lead the writing and publication process of scientific papers and the presentation of the results in national and international conferences

Applications are expected to be received before the 1st of February 2024. The position will be awarded by mid-march 2024, and the selected candidate could start their position in June 2024 and no later than end of September 2024.
To apply, please send a resume, list of publications, statement of research interests and experience, and arrange for at least two letters of reference to be sent to Dr Antoine Strugarek.

Download/Website: `https://tonione.github.io/antoinestrugarek.github.io/jobad_MagEarth.html`

Contact: `antoine.strugarek@cea.fr`

PhD Position Laser Propagation Through Atmospheric Turbulence by Physics Informed Machine Learning

Dr. Rudolf Saathof
[1] Space System Engineering section, Aerospace faculty, TUDelft, The Netherlands

Deadline, 2024, January 16th

Description: Laser satellite communications holds tremendous potential for global telecommunications access. However, the impact of atmospheric turbulence on laser beam propagation presents a significant technological challenge. This obstacle can be addressed through the implementation of adaptive optics and geographic diversity. Our project's primary objective is to create a comprehensive map detailing the optical channel performance across Europe. This map is crucial for designing ground network technology and estimating communication service availability. Due to the current limitations in understanding and estimating channel performance, we will pioneer novel physics-informed machine-learning algorithms to formulate an optical link performance map. This groundbreaking project comprises two PhD positions and one postdoc position, led by experts in meteorology, machine learning, and laser satellite communications. The focus of this particular PhD position is to develop channel models for laser beam propagation through atmospheric turbulence, compensated by adaptive optics. Various optical propagation approaches will be assessed for accuracy and computational efficiency. Traditional optical propagation models are often computationally intensive, making it challenging to evaluate channel models over large geographic areas. Therefore, the primary goal of this PhD position is to design computationally efficient propagation methods. We anticipate that physics-informed machine learning algorithms will play a pivotal role in achieving realistic, detailed channel models with computational efficiency. In addition to establishing these channel models, the PhD project aims to validate them through experimental data. This PhD opportunity offers a stimulating and challenging experience, encompassing both theoretical and experimental aspects. It explores two cutting-edge disciplines—adaptive optics and machine learning—within the context of laser satellite communications, with potential applications extending to fields like astronomy.

Download/Website: `https://www.tudelft.nl/en/about-tu-delft/working-at-tu-delft`

Contact: `R.Saathof@TUDelft.nl`

Phd Position Nulling interferometry for Space

A/Prof. Jérôme LOICQ
[1] Space Instrumentation section, Aerospace faculty, TUDelft, The Netherlands
[2] Applied Science Faculty, ULiege, Belgium

Deadline, 2024, January 14th

One of the most ambitious goals of modern astronomy is to uncover signs of extraterrestrial biological activity. As the number of rocky exoplanets detected around nearby stars rises, questions about their atmospheric composition, evolutionary trajectory, and habitability increase. Measuring the infrared spectrum of these planets poses significant challenges due to the star/planet contrast and very small angular separation from their host stars. Recently, we initiated a study with European Space Agency to explore the design parameters and the performances related to an interferometric concept based on a single spacecraft. The Space Instrumentation section of the Space Engineering department at the Faculty of Aerospace Engineering is offering a PhD position in the domain of interferometry for space. This research domain is dedicated to the development of a space interferometric nulling instrument capable of directly detecting and characterizing exoplanets. For this role, you will be specialized in the field of space interferometry and in the related optical design and experimental work. Knowledge in experimental interferometry, polarimetry and spectroscopy is an asset. In accordance with your supervisor, you will have to develop your research, mostly experimental, in cooperation with the strategy of the section and in synergy with the Space Engineering department. You will participate and contribute to the maturation of the Space instrumentation section.

Download/Website: `https://www.tudelft.nl/en/about-tu-delft/working-at-tu-delft`

Contact: `j.j.d.loicq@tudelft.nl`

Postdoctoral Researcher in Exoplanet Demographics & Gravitational Microlensing

Matthew Penny
[1] Louisiana State University, 202 Nicholson Hall, Tower Drive, Baton Rouge, LA 70803, USA

Baton Rouge, Louisiana, USA, Starting as soon as possible

Applicants are sought for a postdoctoral or senior postdoctoral researcher position at Louisiana State University to work on preparations for the Nancy Grace Roman Space Telescope's Galactic Bulge Time Domain Survey (GBTDS). Roman will launch in 2026 or 2027.

The researcher will work within Professor Matthew Penny's group and as part of the Roman GBTDS Project Infrastructure Team to use simulations and other analysis to develop survey strategies that optimize the GBTDS for the detection and characterization of planets with gravitational microlensing for their use in the study of exoplanet demographics. Experience in gravitational microlensing is not required, and a non-exhaustive list of other areas of expertise that would bring value to the team are:

- Exoplanet demographics & surveys,
- Milky Way structure, stellar populations, chemical evolution & dust,
- High-resolution imaging,
- Wide-field and/or time-domain imaging surveys,
- JWST, HST, Euclid, or near infrared data analysis,
- High-performance and high-throughput computing, computer vision and other areas of machine learning.

Other activities in the research group include:

- Leadership of the MISHAPS transit surveys of the Galactic bulge and globular clusters using the Blanco 4-meter telescope and DECam
- Development of the SynthPop Galactic poulation synthesis package
- Other ground- and space-based microlensing surveys using e.g., UKIRT, DECam, CFHT, and K2

Position is open until filled, but for full consideration apply through LSU's website, or please contact Matthew Penny (penny1@lsu.edu) if you have any questions.

Download/Website: `http://bit.ly/penny-postdoc-2024`

Contact: `penny1@lsu.edu`

4 Conferences and Workshops

Direct Imaging & Characterization of Exoplanets in the ELT Era

SOC: Josh Eisner[1], Serena Benatti[2], Beth Biller[3], Justin Crepp[4], Thomas Henning[5], Jenny Patience[6]

[1] U. Arizona
[2] INAF
[3] U. Edinburgh
[4] U. Notre Dame
[5] MPIA
[6] Arizona State U.

Tucson, Arizona, USA, April 11-13, 2024

The emerging generation of Extremely Large Telescopes (ELTs) will transform the study of exoplanets. While the high angular resolution of ELTs allows imaging of planets at small separations, deep, precise spectroscopy will allow characterization of fundamental planet properties. The Large Binocular Telescope (LBT) provides an edge-to-edge separation of 23 m, and when used as an interferometer (LBTI), it already functions as an ELT. In this conference, we will discuss new ELT-era exoplanet science with LBT, as well as more general exoplanet science for the upcoming ELT landscape.

The conference will be held as an in-person event on the University of Arizona campus, beginning with an evening reception on Wednesday April 10 and concluding with lunch on Saturday April 13. This schedule facilitates viewing of the total solar eclipse elsewhere in North America on April 08, and participation in an LBT 20th Anniversary celebration to be held the afternoon of April 13. Tours of the LBT at Mt Graham for interested parties are planned for Sunday April 14.

Download/Website: `https://www.lbto.org/exo24`

Contact: `exo24@lbto.org`

SEEC Symposium: Pathways to Characterizing Non-Transiting Planets

Ravi Kopparapu, Elisa Quintana, Tad Komacek

NASA GSFC, Greenbelt, MD, April 15–19, 2024

Hosted by GSFC Sellers' Exoplanet Environments Collaboration and University of Maryland College Park Department of Astronomy

Recent exoplanet surveys from the ground have discovered myriad nearby systems that are non-transiting. Currently, the number of known non-transiting systems dominate by a factor of two compared to transiting ones within 20 pc, and by a factor of 9x within 10 pc. It is expected that the number of detected non-transiting planets will continue to grow in the coming years with more high-precision radial velocity surveys, next-generation direct imaging capabilities, Gaia astrometry, and the launch of flagship space missions like the Roman Space Telescope. This interdisciplinary symposium will focus on exploring pathways to characterize non-transiting planets - in particular, the regions of planetary parameter space that are not well represented in transiting planet characterization studies. The goal will be to engage communities working with ground- and space-based observational methods as well as contextualizing theoretical models to prepare for the characterization of these planets in the next decade.
Focus Topics:

- Observations of Nearby Non-Transiting Planets: Phase Curves, Radial Velocity, Astrometry, Direct Imaging
- Demographics of Non-Transiting Planet Population: Microlensing, Radial Velocity, Astrometry
- Characterization: Planetary Parameters, Atmospheres, and System Architectures Using Space-based and Ground-based Approaches
- Theory and Modeling of Non-Transiting Planets
- Science Priorities, Technology Gaps, Instruments and Missions

Due to space limitations, the symposium attendance will be limited to 160 attendees.

Abstract Submission Form (Due Date January 19, 2024):
`https://forms.gle/QaKUyfJVP4pQroVo6`

Download/Website: `https://seec.gsfc.nasa.gov/News_and_Events/SEEC_Symposium_2024.html`

5 As seen on astro-ph

The following list contains exoplanet related entries appearing on astro-ph in November 2023.
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.

November 2023

astro-ph/2311.00108: **Stellar spectral-type (mass) dependence of the dearth of close-in planets around fast-rotating stars. Architecture of Kepler confirmed single-exoplanet systems compared to star-planet evolution models** *by R. A. García et al.*

astro-ph/2311.00175: **Mass and Angular Momentum Transport in a Gravitationally Unstable Protoplanetary Disk with Improved 3D Radiative Hydrodynamics** *by Thomas Y. Steiman-Cameron et al.*

astro-ph/2311.00305: **Planets Across Space and Time (PAST). V. The evolution of hot Jupiters revealed by the age distribution of their host stars** *by Di-Chang Chen et al.*

astro-ph/2311.00516: **Outcomes of Planetary Collisions: Importance of Gravity and Material Properties** *by Jeremy L. Smallwood et al.*

astro-ph/2311.00627: **Keck and Hubble Observations Show That MOA-2008-BLG-379Lb Is a Super-Jupiter Orbiting an M Dwarf** *by David P. Bennett et al.*

astro-ph/2311.00688: **VaTEST III: Validation of 8 Potential Super-Earths from TESS Data** *by Priyashkumar Mistry et al.*

astro-ph/2311.00751: **Rogue worlds meet the dark side: revealing terrestrial-mass primordial black holes with the Nancy Grace Roman Space Telescope** *by William DeRocco et al.*

astro-ph/2311.00775: **Harnessing machine learning for accurate treatment of overlapping opacity species in GCMs** *by Aaron David Schneider et al.*

astro-ph/2311.00238: **Updated Catalog of Kepler Planet Candidates: Focus on Accuracy and Orbital Periods** *by Jack J. Lissauer et al.*

astro-ph/2311.01636: **Non-ideal Magnetohydrodynamic Instabilities in Protoplanetary Disks: Vertical Modes and Reflection Asymmetry** *by Lile Wang et al.*

astro-ph/2311.01618: **Binary planet formation through tides** *by C. Lazzoni et al.*

astro-ph/2311.01506: **A Direct Comparison between the use of Double Gray and Multiwavelength Radiative Transfer in a General Circulation Model with and without Radiatively Active Clouds** *by Isaac Malsky et al.*

astro-ph/2311.16134: **Global-MHD Simulations using MagPIE : Impact of Flux Transfer Events on the Ionosphere** *by Arghyadeep Paul et al.*

astro-ph/2311.01402: **Search for the wide-orbit massive companion of XO-7b in the follow-up radial-velocity and transit-timing data: no significant clues** *by Z. Garai et al.*

astro-ph/2311.01313: **Evolution of helium triplet transits of close-in gas giants orbiting K-dwarfs** *by Andrew P. Allan et al.*

astro-ph/2311.01187: **Potential Melting of Extrasolar Planets by Tidal Dissipation** *by Darryl Z. Seligman et al.*

astro-ph/2311.01427: **Developing a Drift Rate Distribution for Technosignature Searches of Exoplanets** *by Megan G. Li et al.*

astro-ph/2311.02154: **A Blind Search for Transit Depth Variability with TESS** *by Gavin Wang, Néstor Espinoza*

astro-ph/2311.02036: **Pits on Jupiter Family Comets and the age of cometary surfaces** *by Aurélie Guilbert-Lepoutre et al.*

astro-ph/2311.02195: **A Primordial Origin for the Gas-Rich Debris Disks Around Intermediate-Mass Stars** *by Riouhei Nakatani et al.*

astro-ph/2311.01943: **Analytic description of the gas flow around planets embedded in protoplanetary disks** *by Ayumu Kuwahara, Hiroyuki Kurokawa*

astro-ph/2311.01802: **Line profiles of forbidden emission lines and what they can tell us about protoplanetary disk winds** *by Ahmad Nemer, Jeremy Goodman*

astro-ph/2311.02477: **On the likely magnesium-iron silicate dusty tails of catastrophically evaporating rocky planets** *by Beatriz Campos Estrada et al.*

astro-ph/2311.02478: **Evidence for Low-Level Dynamical Excitation in Near-Resonant Exoplanet Systems** *by Malena Rice et al.*

astro-ph/2311.02521: **Exploring the dust grain size and polarization mechanism in the hot and massive Class 0 disk IRAS 16293-2422 B** *by Joaquin Zamponi et al.*

astro-ph/2311.02776: **GOES GLM, Biased Bolides, and Debiased Distributions** *by Anthony Ozerov et al.*

astro-ph/2311.03576: **Tidal Dissipation Regimes Among the Short-Period Exoplanets** *by Emma Louden et al.*

astro-ph/2311.03288: **Hydrodynamic modelling of dynamical tides dissipation in Jupiter's interior as revealed by Juno** *by Hachem Dhouib et al.*

astro-ph/2311.03273: **Tidal dissipation in stably stratified and semi-convective regions of rotating giant planets: incorporating Coriolis forces** *by Christina M. Pontin et al.*

astro-ph/2311.03264: **CHEOPS observations of KELT-20 b/MASCARA-2 b: An aligned orbit and signs of variability from a reflective dayside** *by V. Singh et al.*

astro-ph/2311.03244: **Fully time-dependent cloud formation from a non-equilibrium gas-phase in exoplanetary atmospheres** *by Sven Kiefer et al.*

astro-ph/2311.03190: **A WISPR of the Venus Surface: Analysis of the Venus Nightside Thermal Emission at Optical Wavelengths** *by J. Lustig-Yaeger et al.*

astro-ph/2311.03120: **Near-Infrared Ca II Triplet As An Stellar Activity Indicator: Library and Comparative Study** *by Xin Huang et al.*

astro-ph/2311.02965: **The evaporation of planetary atmosphere** *by E. W. Guenther et al.*

astro-ph/2311.03272: **The debris disc of HD 131488 – Bringing together thermal emission and scattered light** *by Nicole Pawellek et al.*

astro-ph/2311.04286: **A Pathway for Collisional Planetesimal Growth in the Ice-Dominant Regions of Protoplanetary Disks** *by Elizabeth Yunerman et al.*

astro-ph/2311.04268: **Uniform Forward-Modeling Analysis of Ultracool Dwarfs. III. Late-M and L Dwarfs in Young Moving Groups, the Pleiades, and the Hyades** *by Spencer A. Hurt et al.*

astro-ph/2311.04265: **The effect of sculpting planets on the steepness of debris-disc inner edges** *by Tim D. Pearce et al.*

astro-ph/2311.04365: **The formation of wide-orbit giant planets in protoplanetary disks with a decreasing pebble flux** *by Nerea Gurrutxaga et al.*

astro-ph/2311.04153: **Kernel-, mean- and noise-marginalised Gaussian processes for exoplanet transits and H_0 inference** *by Namu Kroupa et al.*

astro-ph/2311.04167: **Exploring Climate with Obliquity in a Variable-eccentricity Earth-like World** *by M. J. Way et al.*

astro-ph/2311.03720: **On Earth's habitability over the Sun's main-sequence history: joint influence of space weather and Earth's magnetic field evolution** *by J. Varela et al.*

astro-ph/2311.04316: **Planetary perturbers: Flaring star-planet interactions in Kepler and TESS** *by Ekaterina Ilin et al.*

astro-ph/2311.03934: **Planet formation around Intermediate-mass stars I: Different disc evolutionary pathways as a function of stellar mass** *by María Paula Ronco et al.*

astro-ph/2311.03936: **The UMIST Database for Astrochemistry 2022** *by T J Millar et al.*

astro-ph/2311.04647: **Modelling the Light Curves of Transiting Exomoons: a Zero-order Photodynamic Agent Added to the Transit and Light Curve Modeller** *by Sz. Kálmán et al.*

astro-ph/2311.04675: **3D Global climate model of an exo-Venus: a modern Venus-like atmosphere for the nearby super-Earth LP 890-9 c** *by Diogo Quirino et al.*

astro-ph/2311.04684: **Impact of Cosmic Rays on Atmospheric Ion Chemistry and Spectral Transmission Fea-**

tures of TRAPPIST-1e *by Konstantin Herbst et al.*

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