ExoPlanet News
An Electronic Newsletter

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Contents

1 Editorial

Welcome to Edition 148 of the ExoPlanet News!

In this October issue you will find abstracts of scientific papers, conference announcements/updates, Exoplanet Archive updates, job postings, a proposal call, and an overview of exoplanet-related articles on astro-ph.

We remind you of some guidelines for using our templates. If you follow these guidelines, you will make our job easier:

- Please rename the *.tex* file you send from *abstract_template* to something with your last name, like *jobs_smith* or *announcement_miller*
- Avoid using hyperlinks, the newsletter template cannot yet handle the package *hyperref*.
- Do not use any defined command or additional packages
- Abstract: should occupy maximum one page of the pdf without figure. If the list of authors is too large for this, please cut the list of authors, add "et al." followed by "(a complete list of authors can be found on the publication)".
- Figure: attach it to the e-mail without large white margins. It should be one single pdf file per abstract.
- Prior to submission, please remember to comment the three lines which start the tex document and the last line which ends the document.
- Please remember to fill the brackets {} after the title with author names.

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 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 9 November 2021.

Holly Capelo
Daniel Angerhausen
Lokesh Mishra
Timm-Emanuel Riesen
Julia Venturini

2 Abstracts of refereed papers

A method to distinguish between micro- and macro-granular surfaces of small Solar System bodies

D. Bischoff, B. Gundlach, J. Blum

Institute for Geophysics and Extraterrestrial Physics, Technische Universität Braunschweig, Mendelssohnstraße 3, 38106 Braunschweig, Germany

Monthly Notices of the Royal Astronomical Society, published (doi:10.1093/mnras/stab2803)

The surface granularity of small Solar System bodies is diverse through the different types of planetary bodies and even for specific objects it is often not known in detail. One of the physical properties that strongly depends on the surface structure is the surface temperature. In highly porous media with large voids, radiation can efficiently transport heat, whereas more compact, micro-porous structures transport the heat primarily by conduction through the solid material. In this work, we investigate under which conditions a macro-porous surface can be distinguished from a micro-porous one by simply measuring the surface temperature. In our numerical simulations, we included circular and elliptical orbits with and without obliquity and varied the rotation period of the considered objects. We found that daily temperature cycles are rather insensitive to the specific surface granularity. However, the surface temperature at sunrise shows significant dependency on the material structure and this effect becomes even more pronounced when the solar intensity increases. By measuring the sunrise temperature as a function of insolation at noon, a differentiation between micro- and macro-granular surface structures is possible. In this paper, we provide a strategy how remote sensing can be used to derive the surface structure of small Solar System bodies.

Download/Website: `https://arxiv.org/abs/2109.12833`

Contact: `d.bischoff@tu-bs.de`

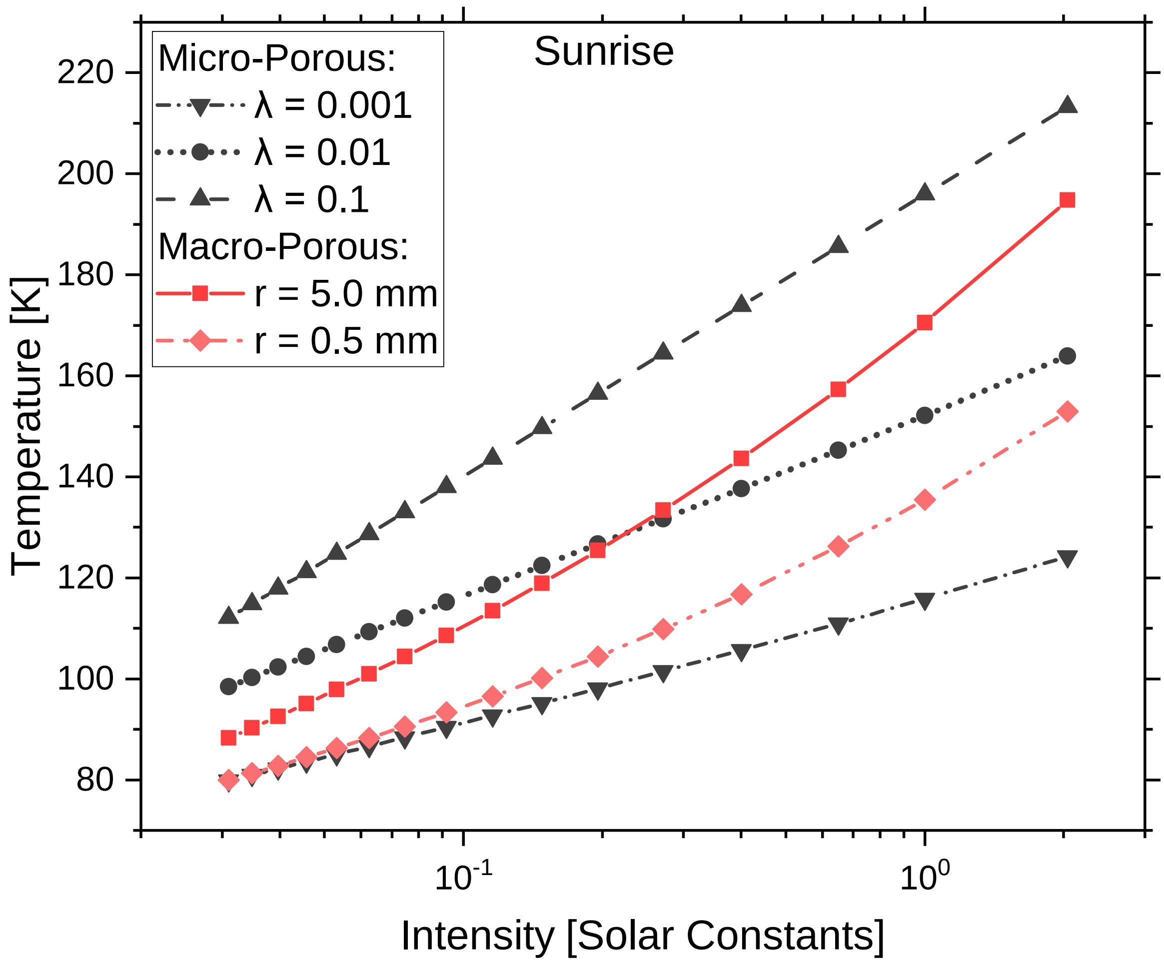

Figure 1: Surface temperature of a spherical body for varying insolation for a circular orbit without obliquity at sunrise. The macro-porous pebble cases assume pebble radii of $R = 5\,\mathrm{mm}$ (red squares) and $R = 0.5\,\mathrm{mm}$ (light red diamonds). The micro-porosity cases (dark grey) use a constant heat conductivity of $\lambda_1 = 0.1\,\mathrm{W/(K\,m)}$ (down-pointing triangles), $\lambda_2 = 0.01\,\mathrm{W/(K\,m)}$ (dots) and $\lambda_3 = 0.001\,\mathrm{W/(K\,m)}$ (up-pointing triangles), respectively.

Flux-Limited Diffusion Approximation Models of Giant Planet Formation by Disk Instability. II. Quadrupled Spatial Resolution

A. P. Boss
Earth & Planets Laboratory, Carnegie Institution for Science, 5241 Broad Branch Road, NW, Washington, DC 20015-1305, U.S.A.

The Astrophysical Journal, in press

While collisional accumulation is nearly universally accepted as the formation mechanism of rock and ice worlds, the situation regarding gas giant planet formation is more nuanced. Gas accretion by solid cores formed by collisional accumulation is the generally favored mechanism, but observations increasingly suggest that gas disk gravitational instability might explain the formation of at least the massive or wide-orbit gas giant exoplanets. This paper continues a series aimed at refining three-dimensional (3D) hydrodynamical models of disk instabilities, where the handling of the gas thermodynamics is a crucial factor. Boss (2017, 2019, 2021) used the β cooling approximation (Gammie 2001) to calculate 3D models of disks with initial masses of 0.091 $M_\odot$ extending from 4 to 20 au around 1 $M_\odot$ protostars. Here we employ 3D flux-limited diffusion (FLD) approximation models of the same disks, in order to provide a superior treatment of disk gas thermodynamics. The new models have quadrupled spatial resolution compared to previous 3D FLD models (Boss 2008, 2012), in both the radial and azimuthal spherical coordinates, resulting in the highest spatial resolution 3D FLD models to date. The new models continue to support the hypothesis that such disks can form self-gravitating, dense clumps capable of contracting to form gas giant protoplanets, and suggest that the FLD models yield similar numbers of clumps as β cooling models with $\beta \sim 1$ to ~ 10, including the critical value of $\beta = 3$ for fragmentation proposed by Gammie (2001).

Download/Website: `https://aboss.dtm.carnegiescience.edu/ftp-files/fld-quad.pdf`

Contact: `aboss@carnegiescience.edu`

Evidence for stellar contamination in the transmission spectra of HAT-P-12b

C. Jiang[1,2], *G. Chen*[1,3], *E. Pallé*[4,5], *F. Murgas*[4,5], *H. Parviainen*[4,5], *F. Yan*[6], *Y. Ma*[1]

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Astronomy & Astrophysics, in press (arXiv:2109.11235)

Transmission spectroscopy characterizes the wavelength dependence of transit depth, revealing atmospheric absorption features in planetary terminator regions. In this context, different optical transmission spectra of HAT-P-12b reported in previous studies exhibited discrepant atmospheric features (e.g., Rayleigh scattering and alkali absorption). We aim to understand the atmosphere of HAT-P-12b using two transit spectroscopic observations by the Gran Telescopio CANARIAS (GTC) and to search for evidence of stellar activity contaminating the transmission spectra, which might be the reason behind the discrepancies. We used Gaussian processes to account for systematic noise in the transit light curves and used nested sampling for Bayesian inferences. We performed joint atmospheric retrievals using the two transmission spectra obtained by GTC OSIRIS, as well as previously published results, coupled with stellar contamination corrections for different observations. The retrieved atmospheric model exhibits no alkali absorption signatures, but shows tentative molecular absorption features including $\mathrm{H_2O}$, $\mathrm{CH_4}$, and $\mathrm{NH_3}$. The joint retrieval of the combined additional public data analysis retrieves similar results, but with a higher metallicity. Based on Bayesian model comparison, the discrepancies of the transmission spectra of HAT-P-12b can be explained by the effect of different levels of unocculted stellar spots and faculae. In addition, we did not find strong evidence for a cloudy or hazy atmosphere from the joint analysis, which is inconsistent with prior studies based on the observations of the Hubble Space Telescope.

Download/Website: `https://arxiv.org/abs/2109.11235`

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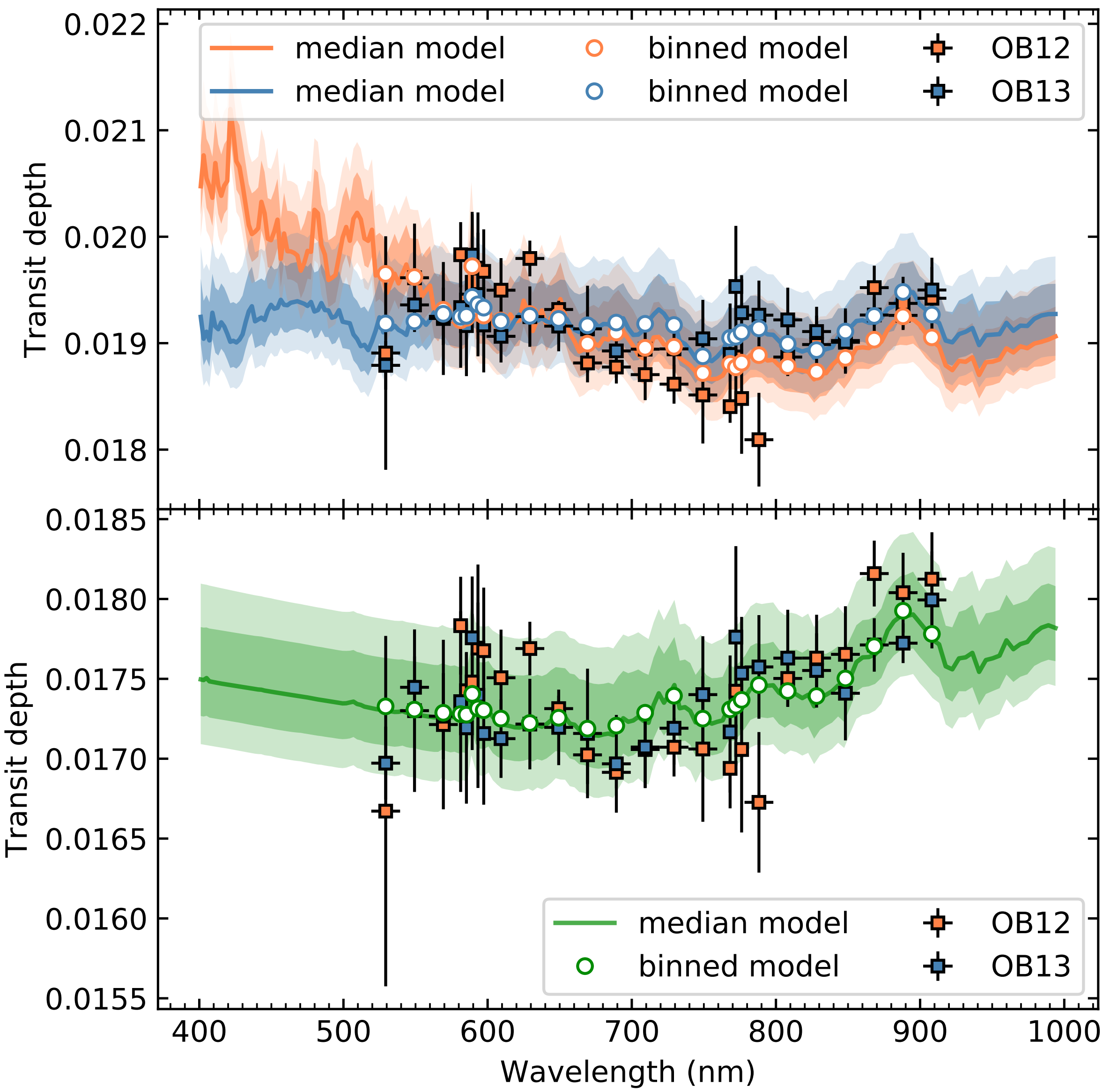

Figure 2: Retrieved transmission spectra of HAT-P-12b. Upper panel: retrieved models composed of both model atmosphere and stellar contamination. Lower panel: transmission spectra and their retrieved models after stellar contamination correction. The model transmission spectra are wavelength-binned to a resolution of $\lambda/\Delta\lambda = 200$.

Rapid formation of Gas Giant Planets via Collisional Coagulation from Dust Grains to Planetary Cores

H. Kobayashi[1], *H. Tanaka*[2],

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The Astrophysical Journal, in press (arXive: 2110.00919)

Gas-giant planets, such as Jupiter, Saturn and massive exoplanets, were formed via the gas accretion onto the solid cores each with a mass of roughly ten Earth masses. However, rapid radial migration due to disk-planet interaction prevents the formation of such massive cores via planetesimal accretion. Comparably rapid core growth via pebble accretion requires very massive protoplanetary disks because most pebbles fall into the central star. Although planetesimal formation, planetary migration, and gas-giant core formation have been studied with much effort, the full evolution path from dust to planets are still uncertain. Here we report the result of full simulations for collisional evolution from dust to planets in a whole disk. Dust growth with realistic porosity allows the formation of icy planetesimals in the inner disk ($\lesssim 10$ au), while pebbles formed in the outer disk drift to the inner disk and there grow to planetesimals. The growth of those pebbles to planetesimals suppresses their radial drift and supplies small planetesimals sustainably in the vicinity of cores. This enables rapid formation of sufficiently massive planetary cores within 0.2-0.4 million years, prior to the planetary migration. Our models shows first gas giants form at 2-7 au in rather common protoplanetary disks, in agreement with the exoplanet and solar systems.

Download/Website: `https://arxiv.org/abs/2110.00919`

Contact: `hkobayas@nagoya-u.jp`

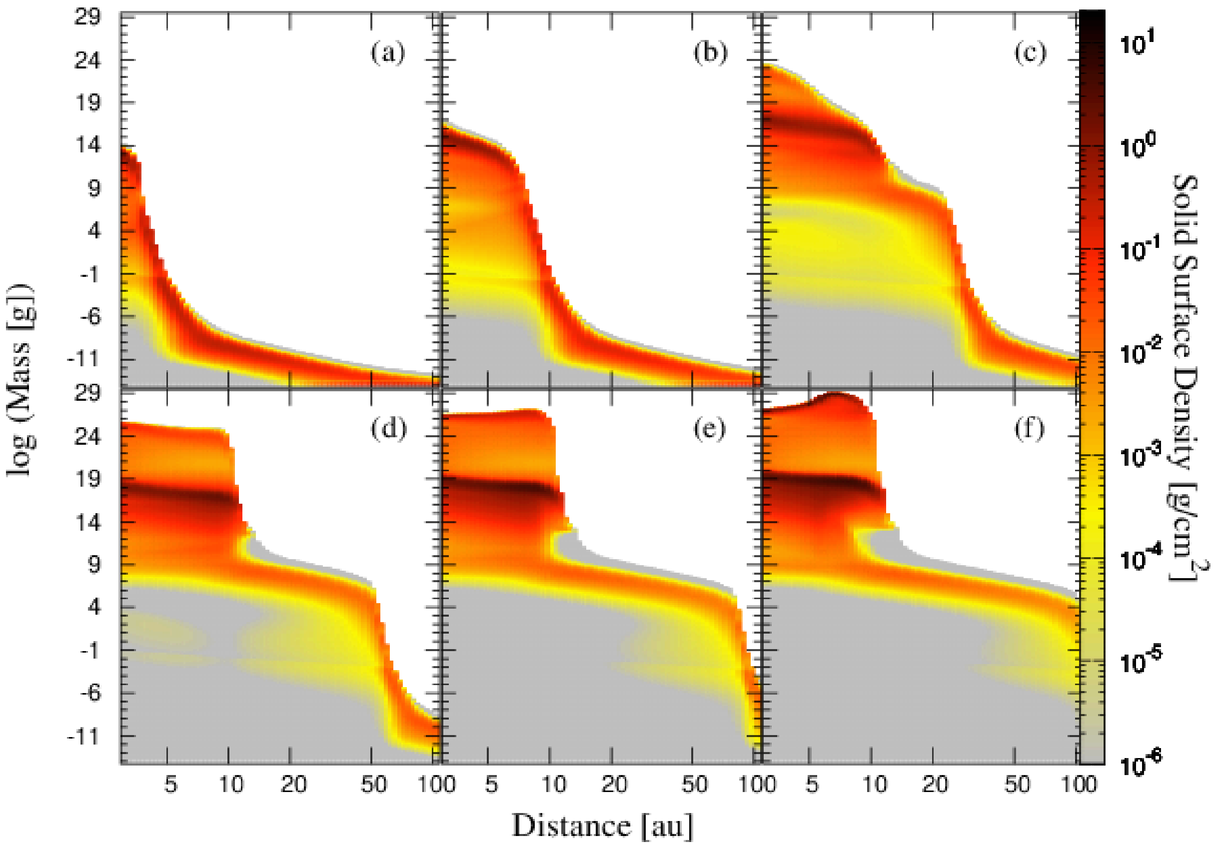

Figure 3: Solid surface density at $t = 5.6 \times 10^2$ (a), 2.1×10^3 (b), 1.5×10^4 (c), 5.6×10^4 (d), 1.2×10^5 (e), 2.1×10^5 (f) years, as a function of the mass of bodies and the distance from the host star. The values of the solid surface density are shown in the color bar.

Charting nearby stellar systems: The intensity of Galactic cosmic rays for a sample of solar-type stars

D. Rodgers-Lee[1], *A. A. Vidotto*[1,2], *A. L. Mesquita*[1,2]

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[2] Leiden Observatory, Leiden University, PO Box 9513, 2300 RA Leiden, The Netherlands

Monthly Notices of the Royal Astronomical Society, in press (arXiv:2109.10831)

Cosmic rays can penetrate planetary atmospheres driving the formation of prebiotic molecules, which are important for the origin of life. We calculate the Galactic cosmic ray fluxes in the habitable zone of five nearby, well-studied solar-type stars and at the orbits of 2 known exoplanets. We model the propagation of Galactic cosmic rays through the stellar winds using a combined 1.5D stellar wind and 1D cosmic ray transport model. We find that the habitable zone of 61 Cyg A has comparable Galactic cosmic ray fluxes to present-day Earth values. For the other four systems (ϵ Eri, ϵ Ind, ξ Boo B and π^1 UMa), the fluxes are orders of magnitude smaller than Earth values. Thus, it is unlikely that any as-of-yet undetected Earth-like planets in their habitable zones would receive a higher radiation dose than is received on Earth. ϵ Ind b, a Jupiter-like planet orbiting at $\sim$11 au, receives higher Galactic cosmic ray fluxes than Earth. We find the suppression of Galactic cosmic rays is influenced by whether diffusion or advection dominates at GeV energies and at distances where the wind has reached its' terminal velocity. For advectively-dominated winds ($\sim$younger systems), varying the astrospheric size influences the suppression significantly. For diffusion-dominated systems ($\sim$older systems) the astrospheric size, and therefore knowledge of the ISM properties, are not very important. This reduces the Galactic cosmic ray flux uncertainties in the habitable zone for diffusion-dominated systems. Whether a system is advection- or diffusion-dominated can be determined from the stellar wind properties.

Download/Website: `https://arxiv.org/abs/2109.10831`

Contact: `drodgers@tcd.ie`

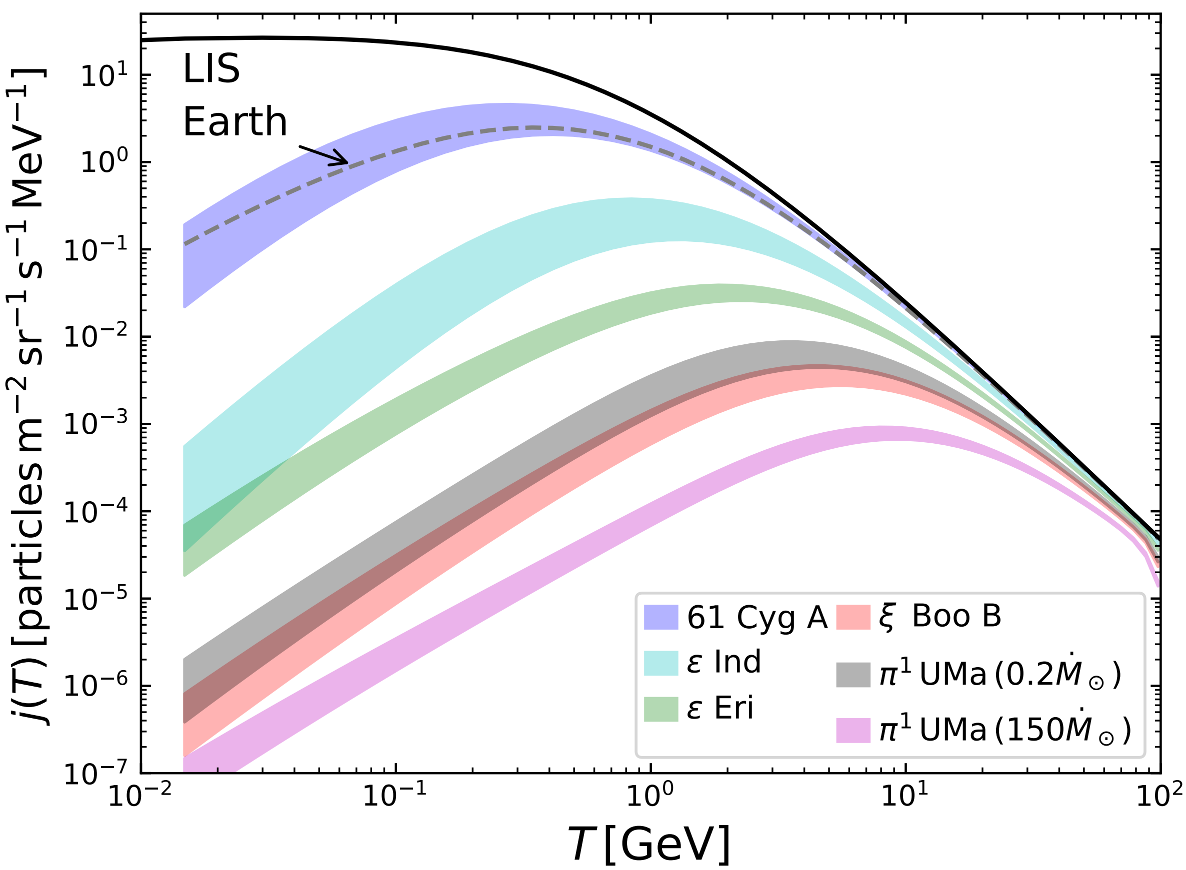

Figure 4: The differential intensities of Galactic cosmic rays in the habitable zone are shown by the shaded regions for a number of nearby solar-type stars as a function of cosmic ray kinetic energy. The solid black line represents the local interstellar spectrum (LIS) for Galactic cosmic rays. The grey dashed line shows the differential intensities at Earth for comparison. Cosmic rays with energies greater than the pion threshold energy (290 MeV) may reach the surface of Earth-like planets.

A Criterion for the Onset of Chaos in Compact, Eccentric Multiplanet Systems

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[2] Canadian Institute for Theoretical Astrophysics, University of Toronto, 60 St. George Street, Toronto, ON M5S 3H8, Canada
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The Astronomical Journal, in press (arXiv:2106.14863)

We derive a semi-analytic criterion for the presence of chaos in compact, eccentric multiplanet systems. Beyond a minimum semimajor-axis separation, below which the dynamics are chaotic at all eccentricities, we show that (i) the onset of chaos is determined by the overlap of two-body mean motion resonances (MMRs), like it is in two-planet systems; (ii) secular evolution causes the MMR widths to expand and contract adiabatically, so that the chaotic boundary is established where MMRs overlap at their greatest width. For closely spaced two-planet systems, a near-symmetry strongly suppresses this secular modulation, explaining why the chaotic boundaries for two-planet systems are qualitatively different from cases with more than two planets. We use these results to derive an improved angular-momentum-deficit (AMD) stability criterion, i.e., the critical system AMD below which stability should be guaranteed. This introduces an additional factor to the expression from Laskar & Petit (2017) that is exponential in the interplanetary separations, which corrects the AMD threshold toward lower eccentricities by a factor of several for tightly packed configurations. We make routines for evaluating the chaotic boundary available to the community through the open-source SPOCK package.

Download/Website: `https://arxiv.org/abs/2106.14863`

Contact: `dtamayo@astro.princeton.edu`

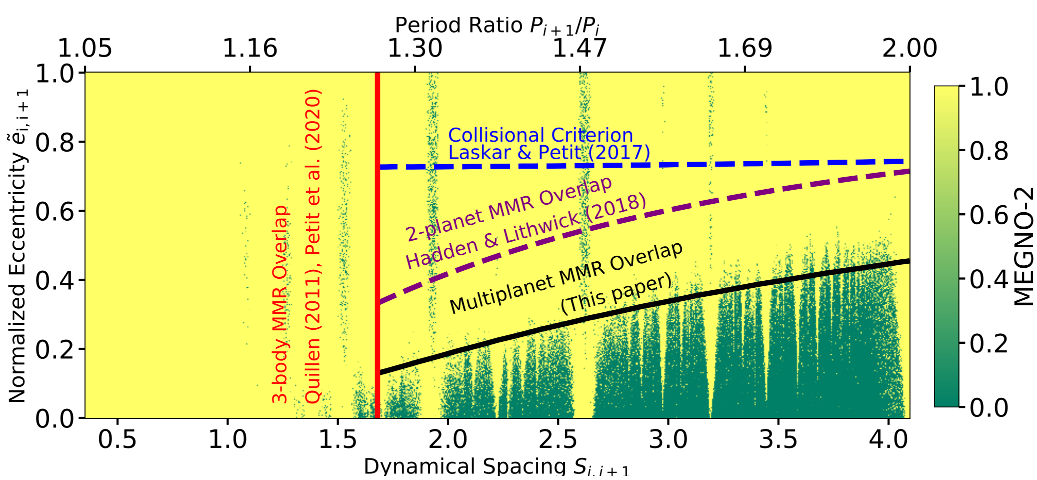

Figure 5: The chaotic boundary in multiplanet systems. Shown are results from simulations of three equally spaced $10M_\oplus$ planets, as a function of the dynamical spacing (Eq. 6) and the normalized eccentricities (Eq. 4); see the text for details. At the tightest separations (left of solid red line), chaos is driven by the overlap of 3-body MMRs (Quillen 2011, Petit et al., 2020). At wider separations, the chaotic boundary is set by the overlap of 2-body MMRs (solid black line). We compare this boundary to the limit for two-body MMR overlap in 2-planet systems from Hadden & Lithwick (2018), shown in dashed purple. The difference between the black and purple lines is due to the secular evolution of the eccentricities driven by the third planet. We also show in dashed blue the critical eccentricity at which the Laplace-Lagrange secular evolution would achieve the orbit-crossing condition of Laskar & Petit (2017).

SWEET-Cat 2.0: The Cat just got SWEETer

S. G. Sousa[1], *V. Adibekyan*[1], *E. Delgado-Mena*[1], *N. C. Santos*[1,2], *B. Rojas-Ayala*[3], *B. M. T. B. Soares*[1,2], *H. Legoinha*[1,2], *S. Ulmer-Moll*[4,1], *J. D. Camacho*[1,2], *S. C. C. Barros*[1], *O. Demangeon*[1], *S. Hoyer*[5], *G. Israelian*[6], *A. Mortier*[7,8], *M. Tsantaki*[9], *M. A. Monteiro*[1]

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[6] Instituto de Astrofísica de Canarias, 38200 La Laguna, Tenerife, Spain
[7] Astrophysics Group, Cavendish Laboratory, University of Cambridge, J.J. Thomson Avenue, Cambridge CB3 0HE, UK
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[9] INAF – Osservatorio Astrofisico di Arcetri, Largo Enrico Fermi 5, 50125 Firenze, Italy

Astronomy & Astrophysics, accepted; arXiv:2109.04781)

The catalog of Stars With ExoplanETs (SWEET-Cat) was originally introduced in 2013. Since then many more exoplanets have been confirmed, increasing significantly the number of host stars listed there. A crucial step toward a comprehensive understanding of these new worlds is the precise and homogeneous characterization of their host stars. Better spectroscopic stellar parameters along with new results from Gaia eDR3 provide updated and precise parameters for the discovered planets. A new version of the catalog, whose homogeneity in the derivation of the parameters is key to unraveling star–planet connections, is available to the community.
We made use of high-resolution spectra for planet-host stars, either observed by our team or collected through public archives. The spectroscopic stellar parameters were derived for the spectra following the same homogeneous process using ARES and MOOG (ARES+MOOG) as for the previous SWEET-Cat releases. We re-derived parameters for the stars in the catalog using better quality spectra and/or using the most recent versions of the codes. Moreover, the new SWEET-Cat table can now be more easily combined with the planet properties listed both at the Extrasolar Planets Encyclopedia and at the NASA exoplanet archive to perform statistical analyses of exoplanets. We also made use of the recent GAIA eDR3 parallaxes and respective photometry to derive consistent and accurate surface gravity values for the host stars.
We increased the number of stars with homogeneous parameters by more than 40% (from 645 to 928). We reviewed and updated the metallicity distributions of stars hosting planets with different mass regimes comparing the low-mass planets ($< 30 M_{\oplus}$) with the high-mass planets. The new data strengthen previous results showing the possible trend in the metallicity-period-mass diagram for low-mass planets.

Download/Website: `https://arxiv.org/abs/2109.04781 ; sweetcat.iastro.pt`

Contact: `sergio.sousa@astro.up.pt`

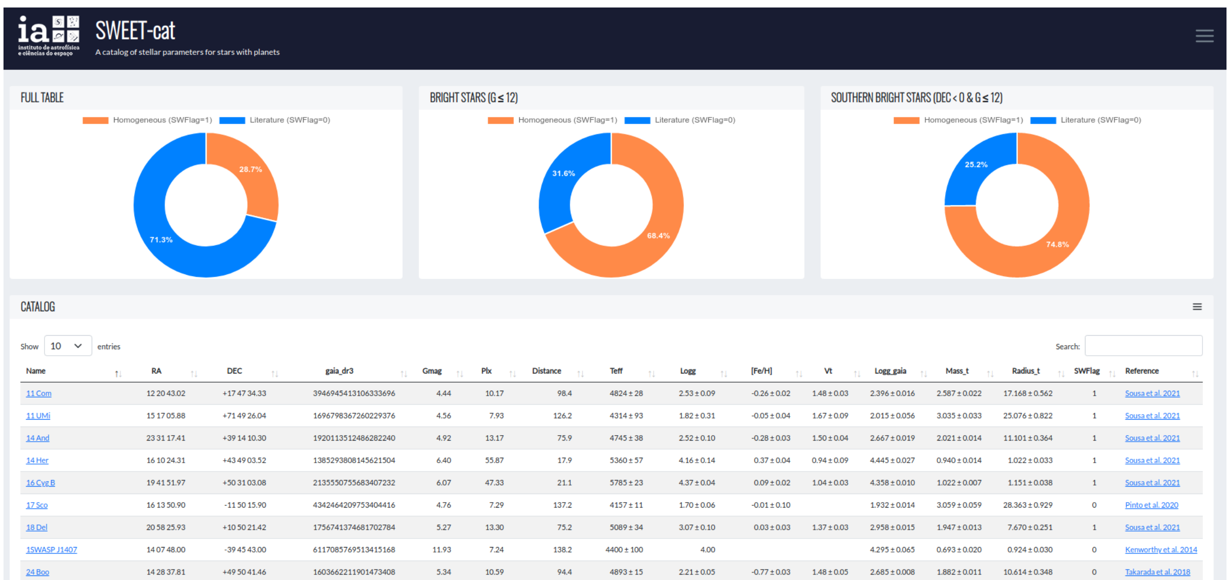

Figure 6: Screenshoot of the new SWEET-Cat webpage available at: sweetcat.iastro.pt

3 Jobs and Positions

Research Associate in Exoplanets and/or Sub-Stellar Objects

Prof. Ray Jayawardhana

Ithaca, NY, 2022

Applications are invited for a Research Associate position at Cornell University. The successful candidate will work with Professor Ray Jayawardhana and his collaborators on observational studies of extra-solar planets and/or sub-stellar objects. Candidates with expertise and interests in ground-based high-resolution exoplanet spectroscopy and/or low-resolution spectroscopy of exoplanets and planetary-mass brown dwarfs with the James Webb Space Telescope (JWST) are particularly encouraged to apply.
Group members lead the on-going ExoGemS Large Program at the Gemini Observatory targeting 40+ planets that span a wide range of properties. Prof. Jayawardhana is also a member of the JWST/NIRISS science team, with 200 hours of GTO dedicated to exoplanet characterization. In addition, with Drs. Aleks Scholz and Koraljka Muzic, he co-leads a 20-hour JWST/NIRISS GTO program focused on the lowest-mass free-floating sub-stellar objects. Group members also use data from TESS, Kepler, CHEOPS, Subaru, Keck, VLT, CFHT, and other major observatories.
The position is for two years, with extension to a third year possible, and comes with a competitive salary and funds for research expenses. Start date is flexible, ideally between April-September 2022.
Applicants should send their curriculum vitae, a description of research interests and plans and a list of publications, and should arrange for three letters of recommendation to be sent directly to Lynda Sovocool (lmk3@cornell.edu). All materials should be submitted electronically to her e-mail address. Applications are accepted until the position is filled, and those received before December 1, 2021 will receive full consideration. Early expressions of interest and inquiries are encouraged, and should be made to rayjay@cornell.edu Candidates interested in applying for a Klarman Fellowship (https://as.cornell.edu/research/klarman-fellowships at Cornell, or bringing other independent fellowships to Cornell, are also encouraged to contact Prof. Jayawardhana.
Cornell University embraces diversity and seeks candidates who will contribute to a climate that supports students, faculty and staff of all identities and backgrounds. We strongly encourage individuals from underrepresented and/or marginalized identities to apply.
Cornell requires that all faculty and staff members, regardless of their work location, disclose their vaccination status, and provide proof of vaccination if vaccinated, immediately upon hire.

Download/Website: `https://astro.cornell.edu/`

Contact: `lmk3@cornell.edu`

Scientific Coordinator

at the Space Research Institute, Graz, Austria, deadline: 1 November 2021

The Space Research Institute (IWF) of the Austrian Academy of Sciences (OeAW), Austria's leading non-university research and science institution, is offering a position as a Scientific Coordinator (Job-ID: IWF108ADM121). The Scientific Coordinator will support the IWF Director Prof. Dr. Christiane Helling.

The tasks of the successful candidate include:

- support of project management, reporting, meeting preparation and follow-up,
- building up a young people program in interdisciplinary space science & planetary research,
- trend-scouting and support of science-technology links in space science,
- support facilitation of growing cross-disciplinary efforts.

We seek a Scientific Coordinator who

- feels at ease in an enthusiastic team of diverse ethnical and scientific backgrounds,
- has experiences in the international space research and funding landscape,
- enables communication across disciplinary boundaries,
- is self-driven, flexible and enjoys problem solving in a research-support environment,
- comprehends complex contexts and is multi-lingual.

Furthermore, it would be beneficial if the candidate has supervised students, and coordinated teams.

The applicant should hold a PhD in astrophysics, geoscience, space science engineering or any reasonably close natural/engineering area.

The position is available as early as January 1, 2022. The initial contract is for 1 year with the expectation of prolongation for a permanent employment depending on adequate performance and agreement of both candidate and institute. The IWF offers an annual gross salary of 55.242,60 based on a full-time employment. Salary and social benefits will be in accordance with the collective agreement of the Austrian Academy of Sciences.

Applications include (1) a curriculum vitae incl. list of publications, (2) statement of the applicant's experience wrt. the above listed tasks (max 2 pages), (3) certificates for the full academic record, and (4) two names of references with the full contact information. Please send the application in PDF format mentioning Job ID: IWF109ADM121 to cosima.muck@oeaw.ac.at no later than November 1, 2021.

Inquiries about the position should be directed to Prof. Dr. Christiane Helling. More information about the institute: http://www.iwf.oeaw.ac.at.

Download/Website: `https://www.oeaw.ac.at/en/iwf/home/`

Contact: `cosima.muck@oeaw.ac.at`

Postdoc Position in Protoplanetary Disk Research

at the Space Research Institute of the Austrian Academy of Science, Graz, Austria, deadline: 1 Jan. 2022

The successful candidate will join a new research group founded at the IWF entitled "Planet-forming Disks and Astrochemistry" led by Dr. Peter Woitke as part of the OeAW's efforts to expand the theme of exoplanet research at the Space Research Institute (IWF) in Graz.

The Space Research Institute (IWF) is involved in about 20 missions led by most of the world main space agencies. The disk group will focus on connecting astrochemistry with planet formation, and to link those theories to both astronomical and solar system observations, and here links to current and future observational campaigns with IWF contribution are highly desirable. The candidate is expected to be an expert in at least one of the following fields:

1. astrochemistry and radiative transfer in protoplanetary disks
2. gas and dust hydrodynamics in disks, MRI
3. winds, outflows and disk evolution
4. modelling planet formation with links to mineralogy and geology
5. observation of protoplanetary disks

In cases 2, 3 or 4, the candidate should be keen on combining their research with the chemical insights provided by the results of thermo-chemical models concerning the ionisation and chemistry of the gas, the location and composition of the ice, and the material composition of the rocks forming in disks. In case 5, the successful candidate is expected to have led several observational programs which resulted in significant publications.

The applicant must hold a PhD in Physics, Geophysics, Astrophysics, or a related field. The appointment is initially for a duration of 3 years, with the possibility of an extension for another 3 years. The appointment begins as early as April 1, 2022, but can also be agreed to start at a later time. We offer an annual gross salary of Euro 49.718,34 (W3/1) according to the collective agreement of the Austrian Academy of Sciences (OeAW).

A valid application must include (1) curriculum vitae, (2) publication list, (3) research statement - max 3 pages, (4) academic certificates, and (5) names of three referees willing to send letters of recommendation. Applications should be sent via email to cosima.muck@oeaw.ac.at in a single PDF file. The closing date of applications is January 1, 2022, but remains open until a suitable candidate has been found. For inquiries, contact Dr Peter Woitke (peter.woitke@oeaw.ac.at). For more information about the institute, see http://www.iwf.oeaw.ac.at.

The Austrian Academy of Sciences (OeAW) pursues a non-discriminatory employment policy and values equal opportunities, as well as diversity. The OeAW lays special emphasis on increasing the number of women in senior and in academic positions. Given equal qualifications, preference will be given to female applicants.

Download/Website: `https://www.oeaw.ac.at/en/iwf/home/`

Contact: `cosima.muck@oeaw.ac.at`

4 Workshops and Programs

Fizeau exchange visitors program in optical interferometry - call for applications

European Interferometry Initiative

www.european-interferometry.eu, application deadline: Nov. 15

The Fizeau exchange visitors program in optical interferometry funds (travel and accommodation) visits of researchers to an institute of his/her choice (within the European Community) to perform collaborative work and training on one of the active topics of the European Interferometry Initiative. The visits will typically last for one month, and strengthen the network of astronomers engaged in technical, scientific and training work on optical/infrared interferometry. The program is open for all levels of astronomers (Ph.D. students to tenured staff), with priority given to PhD students and young postdocs. Non-EU based missions will only be funded if considered essential by the Fizeau Committee. From January 2021 onwards, applications to travel to VLTI Expertise Centres are priority, given the new financial rules applying to the programme. Applicants are strongly encouraged to seek also partial support from their home or host institutions.

The deadline for applications is November 15. Fellowships can be awarded for missions to be carried out between mid January 2022 and July 2022!

Further informations and application forms can be found at: www.european-interferometry.eu
The program is funded by the OPTICON/RadioNet Pilot Program.

Please distribute this message also to potentially interested colleagues outside of your community!

Looking forward to your applications,
Josef Hron
(for the European Interferometry Initiative)

Download/Website: `http://www.european-interferometry.eu`

Contact: `fizeau@european-interferometry.eu`

Planet Formation: From Dust Coagulation to Final Orbit Assembly

Man Hoi Lee, Nader Haghighipour, Soko Matsumura

MIAPP, Garching, Germany, une 7 - July 1, 2022

Dear Colleagues,

It gives us great pleasure to announce the 2022 Planet Formation program at the Munich Institute for Astro- and Particle Physics (MIAPP). This program aims to bring together experts in observation and theory in planetary astronomy to assess the current status of planet formation theories, highlight problems, and explore the possibility of developing comprehensive models. Please see the program website for more details:

https://www.munich-iapp.de/final-orbit-assembly22

The structure of the program is informal. The main goal is to create an environment that will facilitate collaborations and new initiatives. There will be daily gathering for discussing specific topics, new results, and brainstorming.

To attend, please apply using the following link

https://www.munich-iapp.de/2022-registration-planet-formation

Please also note that MIAPP requires attendance for at least two weeks

Financial support is available at the rate of EUR 80 per day for accommodation and local expenses. Additional financial support for attendees with family and children and for graduate students are also available. Please see the details at

https://www.munich-iapp.de/for-visitors/financial-support

Looking forward to receiving your applications.

Man Hoi Lee, Nader Haghighipour, and Soko Matsumura

Contact: `workshop@munich-iapp.de`

5 Announcements

CHEOPS AO-3: save the date

Kate Isaak
ESA CHEOPS Project Scientist, European Space Agency/ESTEC, the Netherlands

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Dear Colleagues,

The Third Annual Announcement of Opportunity (AO-3) for participation in the ESA-run CHEOPS Guest Observers Programme will come out on 9 November 2021, closing 4 weeks later at midday (GMT) on 7 December 2021. This will be the final annual call in the nominal mission, and will cover the period of 26 March 2022 - 23 September 2023.

Full details, including all tools/manuals/information needed to prepare and submit observing proposals, will be available from the dedicated webpage for the call which will be at the link below. In the meantime, information about the CHEOPS mission can be found at:
https://www.cosmos.esa.int/web/cheops
and
https://cheops.unibe.ch/

Don't hesitate to get in touch in case of questions, sending an email to either of the addresses given below.

Best wishes,

Kate Isaak
ESA CHEOPS Project Scientist

Download/Website:
`https://www.cosmos.esa.int/web/cheops-guest-observers-programme/ao-3`
Contact: `kate.isaak@esa.int, cheops-support@cosmos.esa.int`

Update to the CHEOPS Discretionary Programme

Kate Isaak
ESA CHEOPS Project Scientist, European Space Agency/ESTEC, the Netherlands

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Dear Colleagues,

A reminder that ESA is accepting proposals for the CHEOPS discretionary programme. The programme provides the means through which to submit requests for observing time on CHEOPS at any time of the year, and specifically outside the annual announcements of opportunity.

Details of the programme - including all tools/manuals/information needed to prepare and submit observing proposals - can be found at the link given below.

A target must meet very specific criteria for a proposal to be eligible for time within this programme - these are given on the webpage itself, and in the programme documentation (Policies and Procedures document) which is listed on the webpage under *Documentation*. The requirement for the single target to be newly discovered, or newly deemed to be of high scientific interest, is waived for proposals led by PhD students (thesis work) and early career researchers (within 2 years of award of PhD).

When submitting a proposal, it is important to take into account that, for operational reasons, it will take at best a minimum of around 3 weeks from proposal submission to target observation.

Don't hesitate to get in touch in case of questions, sending an email to either of the email addresses given below.

Best wishes,

Kate Isaak
ESA CHEOPS Project Scientist

Download/Website:
`https://www.cosmos.esa.int/web/cheops-guest-observers-programme/discretionary-programme`

Contact: `kate.isaak@esa.int, cheops-support@cosmos.esa.int`

6 Exoplanet Archive Updates

September 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, October 12, 2021

Note: Unless otherwise noted, all planetary and stellar data mentioned in the news are in the Planetary Systems Table (`http://bit.ly/2Pt0tM1`), which provides a single location for all self-consistent planetary solutions, and its companion table the Planetary Systems Composite Parameters (`https://bit.ly/2Fer9NU`), which offers a more complete table of parameters combined from multiple references and calculations. Data can also be found in the Microlensing Planets Table (`https://bit.ly/3urUyZU`) or Direct Imaging Planets Table (`http://bit.ly/3ayD185`).

September 30, 2021

Four New Planets

This week's four new planets include GPX-1 b, the first substellar object discovered by the Galactic Plane eXoplanet (GPX) Survey (`https://bit.ly/3At7YXM`), and TOI-1201 b, a transiting mini-Neptune found by NASA's TESS that orbits the primary star in an equal-mass wide binary system, making it a particularly good candidate for future atmospheric characterization. The other two additions are microlensed planets OGLE-2018-BLG-0567L b and OGLE-2018-BLG-0962L b.

September 23, 2021

Five New Planets, Including First ESPRESSO Stand-alone Detection

We have four new K2 transiting planets, as well as a stand-alone radial velocity detection by the European Southern Observatory's ESPRESSO spectrograph (`https://bit.ly/3ApPerV`)—a first for the instrument. Details are in Lillo-Box et al. (2021) (`https://bit.ly/3BxTA1G`).

Also, this week's update brings our total K2 planet count to **467**! The new planets are: K2-355 b, K2-356 b, K2-357 b, K2-358 b, and HD 22496 b.

September 10, 2021

Two New Transiting Planets

We've added two TESS planets, one of which, TIC 172900988 b, is a circumbinary planet that separately transits both of its host stars. The other planet is TOI-1518 b, an ultra-hot Jupiter in a mis-aligned orbit; the planet is in a retrograde orbit—something not seen in our own solar system. We've also added new parameters for HD 203030 b and the seven TRAPPIST-1 planets.

September 2, 2021

Two Planets Found Via Microlensing

This week's new planets, KMT-2019-BLG-1715L b and KMT-2018-BLG-1025L b, were both found using the microlensing technique. Together they bring the archive's confirmed planet count to **4,514**.

Download/Website: `https://exoplanetarchive.ipac.caltech.edu`
Contact: `mharbut@caltech.edu`

7 As seen on Exoplanet-talks.org

Download/Website: `http://exoplanet-talks.org`
Contact: `info@exoplanet-talks.org`

Instruction video: http://exoplanet-talks.org/talk/164

Detection of OH in the ultra-hot Jupiter WASP-76b by *Rico Landman* – talk/394

8 As seen on astro-ph

astro-ph/2109.00059: **CARMENES detection of the CaII infrared triplet and possible evidence of HeI in the atmosphere of WASP-76b** by *N. Casasayas-Barris et al.*

astro-ph/2109.00163: **No umbrella needed: Confronting the hypothesis of iron rain on WASP-76b with post-processed general circulation models** by *Arjun B. Savel et al.*

astro-ph/2109.00226: **HD22496b: the first ESPRESSO standalone planet discovery** by *J. Lillo-Box et al.*

astro-ph/2109.00421: **An Exogenic Origin for the Volatiles Sampled by the LCROSS Impact** by *Kathleen E Mandt et al.*

astro-ph/2109.00561: **JexoSim 2.0: End-to-End JWST Simulator for Exoplanet Spectroscopy – Implementation and Case Studies** by *Subhajit Sarkar, Nikku Madhusudhan*

astro-ph/2109.00800: **Tadpole type motion of charged dust in the Lagrange problem with planet Jupiter** by *Christoph Lhotka, Lei Zhou*

astro-ph/2109.01020: **Investigating the Relationship between (3200) Phaethon and (155140) 2005 UD through Telescopic and Laboratory Studies** by *Theodore Kareta et al.*

astro-ph/2109.01025: **New Investigations of Dark Floored Pits in the Volatile Ice of Sputnik Planitia on Pluto** by *S. Alan Stern et al.*

astro-ph/2109.01604: **The young Sun's XUV-activity as a constraint for lower CO2-limits in the Earth's Archean atmosphere** by *C.P. Johnstone et al.*

astro-ph/2109.01649: **High Resolution Parameter Study of the Vertical Shear Instability II: Dependence on temperature gradient and cooling time** by *Natascha Manger, Thomas Pfeil, Hubert Klahr*

astro-ph/2109.01976: **Atmospheric Modelling and Retrieval** by *Jonathan J. Fortney, Joanna K. Barstow, Nikku Madhusudhan*

astro-ph/2109.02209: **OGLE-2019-BLG-0304: Competing Interpretations between a Planet-binary Model and a Binary-source + Binary-lens model** by *Cheongho Han et al.*

astro-ph/2109.02273: **Postulating Exoplanetary Habitability via a Novel Anomaly Detection Method** by *Jyotirmoy Sarkar et al.*

astro-ph/2109.02622: **Jupiter as a Rotating Bipolytrope** by *Kundan Kadam*

astro-ph/2109.02675: **Scaling K2. IV. A Uniform Planet Sample for Campaigns 1-8 and 10-18** by *J. K. Zink et al.*

astro-ph/2109.02687: **Linking Outer Disk Pebble Dynamics and Gaps to Inner Disk Water Enrichment** by *A. Kalyaan et al.*

astro-ph/2109.02694: **Laplace-like resonances with tidal effects** by *A. Celletti et al.*

astro-ph/2109.02714: **On the Utility of Transmission Color Analysis I: Differentiating Super-Earths and Sub-Neptunes** by *Kristin S. Sotzen et al.*

astro-ph/2109.03177: **Magnetic Fields and Accreting Giant Planets around PDS 70** by *Yasuhiro Hasegawa, Kazuhiro D. Kanagawa, Neal J. Turner*

astro-ph/2109.03250: **Efficient and precise transit light curves for rapidly-rotating, oblate stars** by *Shashank Dholakia, Rodrigo Luger, Shishir Dholakia*

astro-ph/2109.03296: **Sifting Through the Static: Moving Object Detection in Difference Images** by *Hayden Smotherman et al.*

astro-ph/2109.03333: **Wide Dust Gaps in Protoplanetary Disks Induced by Eccentric Planets: A Mass-Eccentricity Degeneracy** by *Yi-Xian Chen et al.*

astro-ph/2109.03346: **The K2-OjOS Project: New and Revisited Planets and Candidates in K2 Campaigns 5, 16 18** by *A. Castro-González et al.*

astro-ph/2109.03347: **Exploring tidal obliquity variations with SMERCURY-T** by *Steven M. Kreyche et al.*

astro-ph/2109.03589: **How drifting and evaporating pebbles shape giant planets II: Volatiles and refractories in atmospheres** by *Aaron David Schneider, Bertram Bitsch*

astro-ph/2109.03650: **The terrestrial planet formation paradox inferred from high-resolution N-body simulations** by *Jason Man Yin Woo et al.*

astro-ph/2109.03771: **TOI-3362b: A Proto-Hot Jupiter Undergoing High-Eccentricity Tidal Migration** by *Jiayin Dong et al.*

astro-ph/2109.03924: **Flares, Rotation, and Planets of the AU Mic System from TESS Observations** by *Emily A. Gilbert et al.*

astro-ph/2109.04113: **The dispersal of protoplanetary discs. II: Photoevaporation models with observationally derived irradiating spectra** by *Barbara Ercolano et al.*

astro-ph/2109.04174: **The obliquity of HIP 67522 b: a 17 Myr old transiting hot Jupiter-sized planet** by *Alexis Heitzmann et al.*

astro-ph/2109.04224: **Collisional mixing between inner and outer solar system planetesimals inferred from the Nedagolla iron meteorite** by *Fridolin Spitzer et al.*

astro-ph/2109.04373: **Detection of Ionized Calcium in the Atmosphere of the Ultra-Hot Jupiter WASP-76b** by *Emily K. Deibert et al.*

astro-ph/2109.04376: **A Lyman-alpha transit left undetected: the environment and atmospheric behavior of K2-25b** by *Keighley E. Rockcliffe et al.*

astro-ph/2109.04590: **The peculiar chemical pattern of the WASP-160 binary system: signatures of planetary formation and evolution?** by *Emiliano Jofré et al.*

astro-ph/2109.04781: **SWEET-Cat 2.0: The Cat just got SWEETer; Higher quality spectra and precise parallaxes from GAIA eDR3** by *S. G. Sousa et al.*

astro-ph/2109.05031: **Spi-OPS: Spitzer and CHEOPS confirm the near-polar orbit of MASCARA-1 b and reveal a hint of dayside reflection** by *M. J. Hooton et al.*

astro-ph/2109.05398: **Rescuing Unrecognized Exoplanet Candidates in Kepler Data** by *Steve Bryson et al.*

astro-ph/2109.05764: **Retrieving Dust Grain Sizes from Photopolarimetry: An Experimental Approach** by *O. Munoz et al.*

astro-ph/2109.05823: **Universal protoplanetary disk size under complete non-ideal magnetohydrodynamics: The interplay between ion-neutral friction, Hall effect, and the Ohmic dissipation** by *Yueh-Ning Lee et al.*

astro-ph/2109.06108: **Analysis of HAT-P-16b and TrES-3b Exoplanets by the Transit Timing Variations Method** by *Y. Aladağ et al.*

astro-ph/2109.06182: **Not the Birth Cluster: the Stellar Clustering that Shapes Planetary Systems is Generated by Galactic-Dynamical Perturbations** by *J. M. Diederik Kruijssen et al.*

astro-ph/2109.06183: **Relentless and Complex Transits from a Planetesimal Debris Disk** by *J. Farihi et al.*

astro-ph/2109.06188: **Molecules with ALMA at Planet-forming Scales (MAPS) II: CLEAN Strategies for Synthesizing Images of Molecular Line Emission in Protoplanetary Disks** by *Ian Czekala et al.*

astro-ph/2109.06202: **Molecules with ALMA at Planet-forming Scales (MAPS) XVII: Determining the 2D Thermal Structure of the HD 163296 Disk** by *Jenny K. Calahan et al.*

astro-ph/2109.06210: **Molecules with ALMA at Planet-forming Scales (MAPS) III: Characteristics of Radial Chemical Substructures** by *Charles J. Law et al.*

astro-ph/2109.06218: **Molecules with ALMA at Planet-forming Scales (MAPS XVIII): Kinematic Substructures in the Disks of HD 163296 and MWC 480** by *Richard Teague et al.*

astro-ph/2109.06221: **Molecules with ALMA at Planet-forming Scales (MAPS). VII. Sub-stellar O/H and C/H and super-stellar C/O in planet feeding gas** by *Arthur D. Bosman et al.*

astro-ph/2109.06223: **Molecules with ALMA at Planet-forming Scales (MAPS). XV. Tracing protoplanetary disk structure within 20 au** by *Arthur D. Bosman et al.*

astro-ph/2109.06224: **Molecules with ALMA at Planet-forming Scales (MAPS) XIX. Spiral Arms, a Tail, and Diffuse Structures Traced by CO around the GM Aur Disk** by *Jane Huang et al.*

astro-ph/2109.06228: **Molecules with ALMA at Planet-forming Scales. XX. The Massive Disk Around GM Aurigae** by *Kamber R. Schwarz et al.*

astro-ph/2109.06233: **Molecules with ALMA at Planet-forming Scales (MAPS) V: CO gas distributions** by *Ke Zhang et al.*

astro-ph/2109.06263: **Molecules with ALMA at Planet-forming Scales (MAPS) VIII: CO Gap in AS 209–Gas Depletion or Chemical Processing?** by *Felipe Alarcón et al.*

astro-ph/2109.06268: **Molecules with ALMA at Planet-forming Scales (MAPS) I: Program Overview and Highlights** by *Karin I. Oberg et al.*

astro-ph/2109.06319: **Molecules with ALMA at Planet-forming Scales (MAPS). IX. Distribution and Properties of the Large Organic Molecules HC3N, CH3CN, and c-C3H2** by *John D. Ilee et al.*

astro-ph/2109.06335: **Probing the atmosphere of WASP-69 b with low- and high-resolution transmission spectroscopy** by *S. Khalafinejad et al.*

astro-ph/2109.06391: **Molecules with ALMA at Planet-forming Scales (MAPS) VI: Distribution of the small organics HCN, C2H, and H2CO** by *Viviana V. Guzmán et al.*

astro-ph/2109.06433: **Molecules with ALMA at Planet-forming Scales (MAPS) XIV: Revealing disk substructures in multi-wavelength continuum emission** by *Anibal Sierra et al.*

astro-ph/2109.06568: **Modons on Tidally Synchronised Extrasolar Planets** by *J. W. Skinner, J. Y-K. Cho*

astro-ph/2109.06586: **Molecules with ALMA at Planet-forming Scales (MAPS) XVI: Characterizing the impact of the molecular wind on the evolution of the HD 163296 system** by *Alice S. Booth et al.*

astro-ph/2109.06930: **Keck/OSIRIS Pa high-contrast imaging and updated constraints on PDS 70b** by *Taichi Uyama et al.*

astro-ph/2109.06942: **Thermal history of matrix forsterite grains from Murchison based on high-resolution tomography** by *Giulia Perotti et al.*

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astro-ph/2109.07068: **Three faint-source microlensing planets detected via resonant-caustic channel** by *Cheongho Han et al.*

astro-ph/2109.07168: **UV lines as a tracers for the XUV-fluxes of stars and the PLATOspec project** by *Guenther et al.*

astro-ph/2109.07397: **An Improved Approach to Orbital Determination and Prediction of Near-Earth Asteroids: Computer Simulation, Modeling and Test Measurements** by *Muhammad Farae, Cameron Woo, Anka Hu* astro-ph/2109.07549: **Galactic and stellar perturbations of long period comet motion – practical considerations** by *Piotr A. Dybczyński, Sławomir Breiter*

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astro-ph/2109.07790: **Planet Formation** by *Ravit Helled, Alessandro Morbidelli*

astro-ph/2109.08609: **Exploring deep and hot adiabats as a potential solution to the radius inflation problem in brown dwarfs: Long-timescale models of the deep atmospheres of KELT-1b, Kepler-13Ab, and SDSS1411B** by *F. Sainsbury-Martinez et al.*

astro-ph/2109.08735: **Analyzing the Habitable Zones of Circumbinary Planets Using Machine Learning** by *Zhihui Kong et al.*

astro-ph/2109.08756: **Early habitability and crustal decarbonation of a stagnant-lid Venus** by *Dennis Höning et al.*

astro-ph/2109.08790: **A Uniform Search for Nearby Planetary Companions to Hot Jupiters in TESS Data Reveals Hot Jupiters are Still Lonely** by *Benjamin J. Hord et al.*

astro-ph/2109.08984: **Multiband imaging of the HD 36546 debris disk: a refined view from SCExAO/CHARIS** by *Kellen Lawson et al.*

astro-ph/2109.09185: **Unveiling wide-orbit companions to K-type stars in Sco-Cen with Gaia EDR3** by *Alexander J. Bohn et al.*

astro-ph/2109.09247: **Discovery of Molecular Line Polarization in the Disk of TW Hya** by *Richard Teague et al.*

astro-ph/2109.09252: **TOI-1296b and TOI-1298b observed with TESS and SOPHIE: Two hot Saturn-mass exoplanets with different densities around metal-rich stars** by *C. Moutou et al.*

astro-ph/2109.09257: **Tidal migration of hot Jupiters. Introducing the impact of gravity wave dissipation** by *Y.A. Lazovik*

astro-ph/2109.09346: **TOI-1201 b: A mini-Neptune transiting a bright and moderately young M dwarf** by *D. Kossakowski et al.*

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astro-ph/2109.09564: **The First Detection of CH2CN in a Protoplanetary Disk** by *Alessandra Canta et al.*

astro-ph/2109.09579: **Dust rings as a footprint of planet formation in a protoplanetary disk** by *Kazuhiro D. Kanagawa, Takayuki Muto, Hidekazu Tanaka*

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astro-ph/2109.09776: **GW Ori: circumtriple rings and planets** by *Jeremy L. Smallwood et al.*

astro-ph/2109.10422: **Precise Masses and Orbits for Nine Radial Velocity Exoplanets** by *Yiting Li et al.*

astro-ph/2109.10503: **Identifying Potential Exomoon Signals with Convolutional Neural Networks** by *Alex Teachey, David Kipping*

astro-ph/2109.10671: **The mass of Beta Pictoris c from Beta Pictoris b orbital motion** by *S. Lacour et al.*

astro-ph/2109.10822: **Mapping the 3D Kinematical Structure of the Gas Disk of HD 169142** by *Haochuan Yu et al.*

astro-ph/2109.10838: **A Snowball in Hell: The Potential Steam Atmosphere of TOI-1266c** by *C. E. Harman et al.*

astro-ph/2109.10984: **The dynamics of the TRAPPIST-1 system in the context of its formation** by *Shuo Huang, Chris W. Ormel*

astro-ph/2109.11017: **On the Fate of Interstellar Objects Captured by our Solar System** by *Kevin J Napier, Fred C Adams, Konstantin Batygin*

astro-ph/2109.11235: **Evidence for stellar contamination in the transmission spectra of HAT-P-12b** by *C. Jiang et al.*

astro-ph/2109.11366: **Critical Analysis of TESS Transit Photometric Data: Improved Physical Properties for Five Exoplanets** by *Suman Saha, Sujan Sengupta*

astro-ph/2109.11385: **Terrestrial planet formation by torque-driven convergent migration of planetary embryos** by *M. Brož et al.*

astro-ph/2109.11457: **The TRAPPIST-1 Habitable Atmosphere Intercomparison (THAI). Part I: Dry Cases – The fellowship of the GCMs** by *Martin Turbet et al.*

astro-ph/2109.11459: **The TRAPPIST-1 Habitable Atmosphere Intercomparison (THAI). Part II: Moist Cases – The Two Waterworlds** by *Denis E. Sergeev et al.*

astro-ph/2109.11460: **The TRAPPIST-1 Habitable Atmosphere Intercomparison (THAI). Part III: Simulated Observables – The return of the spectrum** by *Thomas J. Fauchez et al.*

astro-ph/2109.11653: **Formation of polar terrestrial circumbinary planets** by *Anna Childs, Rebecca Martin*

astro-ph/2109.11659: **Reflected spectroscopy of small exoplanets I: determining the atmospheric composition of sub-Neptunes planets** by *Mario Damiano, Renyu Hu*

astro-ph/2109.12054: **A General Origin for Multi-Planetary Systems With Significantly Misaligned USP Planets** by *Lucas Brefka, Juliette Becker*

astro-ph/2109.12132: **Detecting Biosignatures in the Atmospheres of Gas Dwarf Planets with the James Webb Space Telescope** by *Caprice Phillips et al.*

astro-ph/2109.12376: **How Complete Are Surveys for Nearby Transiting Hot Jupiters?** by *Samuel W. Yee, Joshua N. Winn, Joel D. Hartman*

astro-ph/2109.13248: **Hot Jupiter formation in dense clusters: secular chaos in multi-planetary systems** by *Yihan Wang et al.*

astro-ph/2109.13256: **Dust Traffic Jams in Inclined Circumbinary Protoplanetary Discs I. Morphology and Formation Theory** by *Hossam Aly et al.*

astro-ph/2109.13275: **Reinvestigation of the Multi-Epoch Direct Detections of HD 88133 b and Upsilon Andromedae b** by *Cam Buzard et al.*

astro-ph/2109.13307: **Signatures of a Distant Planet on the Inclination Distribution of the Detached Kuiper Belt** by *Kalee E. Anderson, Nathan A. Kaib*

astro-ph/2109.13371: **Exploring the Effects of Active Magnetic Drag in a GCM of the Ultra-Hot Jupiter WASP-76b** by *Hayley Beltz et al.*

astro-ph/2109.13487: **Size evolution of close-in super-Earths through giant impacts and photoevaporation** by *Yuji Matsumoto et al.*

astro-ph/2109.13996: **Diving Beneath the Sea of Stellar Activity: Chromatic Radial Velocities of the Young AU Mic Planetary System** by *Bryson Cale et al.*

astro-ph/2109.14413: **Variation of the stellar color in high-magnification and caustic-crossing microlensing events** by *Sedighe Sajadian, Uffe G. Jorgensen*

astro-ph/2109.14466: **Vertical settling of pebbles in turbulent circumbinary discs and the in situ formation of circumbinary planets** by *Arnaud Pierens, Richard P. Nelson, Colin P. McNally* astro-ph/2109.14557: **Modeling the microlensing of circumbinary systems** by *Brett George et al.*

astro-ph/2109.14577: **Demographics of Exoplanets in Binaries (DEB). I. Architecture of S-Type Planetary Systems Revealed by the RV Sample** by *Xiang-Ning Su et al.*

astro-ph/2109.00192: **The Measurement of Dynamic Tidal Contribution to Apsidal Motion in Heartbeat Star KIC 4544587** by *Jian-wen Ou et al.*

astro-ph/2109.00679: **Rocky planet engulfment in the binary system HIP 71726-37** by *J. Yana Galarza et al.*

astro-ph/2109.01979: **An unbiased NOEMA 2.6 to 4 mm survey of the GG Tau ring: First detection of CCS in a protoplanetary disk** by *N.T. Phuong*

astro-ph/2109.02647: **Gaia predicted brown dwarf detection rates around FGK stars in astrometry, radial velocity, and photometric transits** by *B. Holl et al.*

astro-ph/2109.02680: **The circularization timescales of late-type binary stars** by *Caroline Terquem, Scott Martin*

astro-ph/2109.03321: **The Planetary Systems Imager Adaptive Optics System: An Initial Optical Design and Performance Analysis Tools for the PSI-Red AO System** by *Rebecca Jensen-Clem et al.*

astro-ph/2109.04501: **Flares Big and Small: a K2 and TESS View of ASAS-SN Superflares** by *Jesse Zeldes et al.*

astro-ph/2109.04844: **Chemical abundances of 1111 FGK stars from the HARPS GTO planet search program IV. Carbon and C/O ratios for Galactic stellar populations and planet hosts** by *E. Delgado Mena et al.*

astro-ph/2109.06175: **Intermittent Signals and Planetary Days in SETI** by *Robert H. Gray*

astro-ph/2109.06217: **Molecules with ALMA at Planet-forming Scales (MAPS) IV: Emission Surfaces and Vertical Distribution of Molecules** by *Charles J. Law et al.*

astro-ph/2109.06286: **Molecules with ALMA at Planet-forming Scales (MAPS) XII: Inferring the C/O and S/H ratios in Protoplanetary Disks with Sulfur Molecules** by *Romane Le Gal et al.*

astro-ph/2109.06419: **Molecules with ALMA at Planet-forming Scales (MAPS) XIII: HCO+ and disk ionization structure** by *Yuri Aikawa et al.*

astro-ph/2109.06462: **Molecules with ALMA at Planet-forming Scales (MAPS). X. Studying deuteration at high angular resolution toward protoplanetary disks** by *Gianni Cataldi et al.*

astro-ph/2109.06492: **Imprint of planet formation in the deep interior of the Sun** by *Masanobu Kunitomo, Tristan Guillot*

astro-ph/2109.06694: **Molecules with ALMA at Planet-forming Scales (MAPS) XI: CN and HCN as Tracers of Photochemistry in Disks** by *Jennifer B. Bergner et al.*

astro-ph/2109.06761: **htof: A new open-source tool for analyzing Hipparcos, Gaia, and future astrometric missions** by *G. Mirek Brandt et al.*

astro-ph/2109.07011: **Testing Self-Organized Criticality Across the Main Sequence using Stellar Flares from TESS** by *Adina D. Feinstein et al.*

astro-ph/2109.08562: **Nonlinear simulations of tides in the convective envelopes of low-mass stars and giant gaseous planets** by *A. Astoul, A. J. Barker*

astro-ph/2109.08889: **Nonlinear resonant torus oscillations as a model of Keplerian disc warp dynamics** by *Callum Fairbairn, Gordon Ogilvie*

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