ExoPlanet News
An Electronic Newsletter

No. 147, 14 September 2021

Editors: D. Angerhausen, L. Mishra, H. Capelo & J. Venturini
NCCR PlanetS, Gesellschaftsstrasse 6, CH-3012 Bern, Switzerland

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

Contents

1 Editorial

Welcome to Edition 147 of the ExoPlanet News!

As usual we bring you abstracts of scientific papers, job ads, conference announcements, the latest from exoplanet-talks.org, 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!

As always, we would 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 Tuesday, October 12th 2021.
Thanks again for your support, and best regards from the editorial team,

Daniel Angerhausen
Julia Venturini
Lokesh Mishra
Holly Capelo

Univ. of Bern, Univ. of Geneva, ETH Zürich, Univ. of Zürich, EPF Lausanne
The National Centers of Competence in Research (NCCR) are a research instrument of the Swiss National Science Foundation.

2 Abstracts of refereed papers

On the Detection of Exomoons Transiting Isolated Planetary-Mass Objects

M. A. Limbach[1], *J. M. Vos*[2], *J. N. Winn*[3], *R. Heller*[4,5], *J. C. Mason*[6], *A. C. Schneider*[7,8], *F. Dai*[9]
[1] Department of Physics and Astronomy, Texas A&M University, 4242 TAMU, College Station, TX 77843-4242 USA
[2] Department of Astrophysics, American Museum of Natural History, Central Park West at 79th Street, NY 10024, USA
[3] Department of Astrophysical Sciences, Peyton Hall, 4 Ivy Lane, Princeton, NJ 08544, USA
[4] Max Planck Institute for Solar System Research, Justus-von-Liebig-Weg 3, 37077 Göttingen, Germany
[5] Georg-August-Universität Göttingen, Institut für Astrophysik, Friedrich-Hund-Platz 1, 37077 Göttingen, Germany
[6] Department of Physics, New Mexico Institute of Mining and Technology, 801 Leroy Place, Socorro, NM 87801, USA
[7] United States Naval Observatory, Flagstaff Station, 10391 West Naval Observatory Rd., Flagstaff, AZ 86005, USA
[8] Department of Physics and Astronomy, George Mason University, MS3F3, 4400 University Drive, Fairfax, VA 22030, USA
[9] Div. of Geological & Planetary Sciences, California Inst. of Technology, 1200 E California Blvd, Pasadena, CA 91125, USA

The Astrophysical Journal Letters, DOI:10.3847/2041-8213/ac1e2d

All-sky imaging surveys have identified several dozen isolated planetary-mass objects (IPMOs), far away from any star. Here, we examine the prospects for detecting transiting moons around these objects. We expect transiting moons to be common, occurring around 10–15% of IPMOs, given that close-orbiting moons have a high geometric transit probability and are expected to be a common outcome of giant planet formation. IPMOs offer an advantage over other directly imaged planets in that high-contrast imaging is not necessary to detect the photometric transit signal. For at least 30 ($> 50\%$) of the currently known IPMOs, observations of a single transit with the *James Webb Space Telescope* would have low enough forecasted noise levels to allow for the detection of an Io-like or Titan-like moon. Intrinsic variability of the IPMOs will be an obstacle. Using archival time-series photometry of IPMOs with the *Spitzer Space Telescope* as a proof-of-concept, we found evidence for a fading event of 2MASS J1119-1137 AB that might have been caused by intrinsic variability, but is also consistent with a single transit of a habitable-zone $1.7\,R_\oplus$ exomoon. Although the interpretation of this particular event is inconclusive, the characteristics of the data and the candidate signal suggest that Earth-sized habitable-zone exomoons around IPMOs are detectable with existing instrumentation.

Download/Website: `https://ui.adsabs.harvard.edu/abs/2021arXiv210808323L/abstract`

Contact: `maryannelimbach@gmail.com`

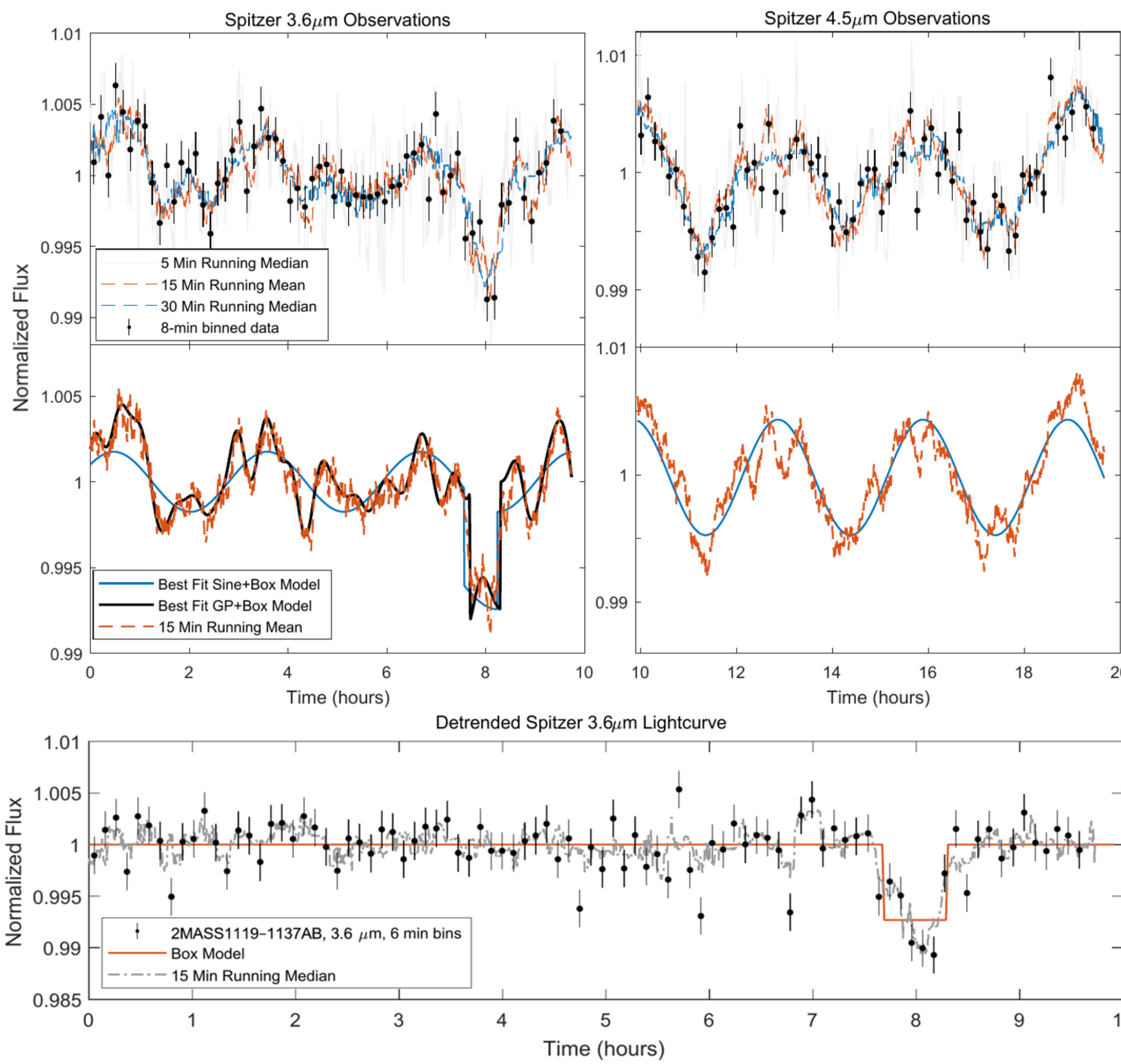

Figure 1: Limbach et al.: **Top:** *Spitzer* light curves of 2MASS J1119-1137AB based on a single 20-hour observation, 10 hours at 3.6μm (left) and 10 hours at 4.5μm (right). Note the fading event at the 8-hour mark of the 3.6μm light curve. **Middle:** Shown in addition to the 15-min running mean of the data (red dashed line) are the best fit sine+box model (blue curves) and the Gaussian Process model of the $3.6\mu m$ data (black curve). The sine+box model is favored over the sine-only model by $\Delta BIC = 22$. The GP+box model is favored over the GP-only model by a Bayes factor of 3. **Bottom:** Detrended (with GP-fit) light curve and box fit to data.

On the importance of wave planet interactions for the migration of two super-Earths embedded in a protoplanetary disk

Zijia Cui[1], *John C. B. Papaloizou*[2], *Ewa Szuszkiewicz*[1]
[1] Institute of Physics and CASA*, University of Szczecin, Wielkopolska 15, 70-451 Szczecin, Poland
[2] DAMTP, University of Cambridge, Wilberforce Road, Cambridge, CB3 0WA, UK

The Astrophysical Journal, in press (arXiv: 2108.00792)

We investigate a repulsion mechanism between two low-mass planets migrating in a protoplanetary disk, for which the relative migration switches from convergent to divergent. This mechanism invokes density waves emitted by one planet transferring angular momentum to the coorbital region of the other and then directly to it through the horseshoe drag. We formulate simple analytical estimates, which indicate when the repulsion mechanism is effective. One condition for a planet to be repelled is that it forms a partial gap in the disk and another is that this should contain enough material to support angular momentum exchange with it. Using two-dimensional hydrodynamical simulations we obtain divergent migration of two super-Earths embedded in a protoplanetary disk because of repulsion between them and verify these conditions. To investigate the importance of resonant interaction we study the migration of planet pairs near first-order commensurabilities. It appears that proximity to resonance is significant but not essential. In this context we find repulsion still occurs when the gravitational interaction between the planets is removed suggesting the importance of angular momentum transfer through waves excited by another planet. This may occur through the scattering of coorbital material (the horseshoe drag), or material orbiting close by. Our results indicate that if conditions favor the repulsion between two planets described above, we expect to observe planet pairs with their period ratios greater, often only slightly greater, than resonant values or possibly rarity of commensurability.

Download/Website: `https://arxiv.org/abs/2108.00792`

Contact: `ewa.szuszkiewicz@usz.edu.pl`

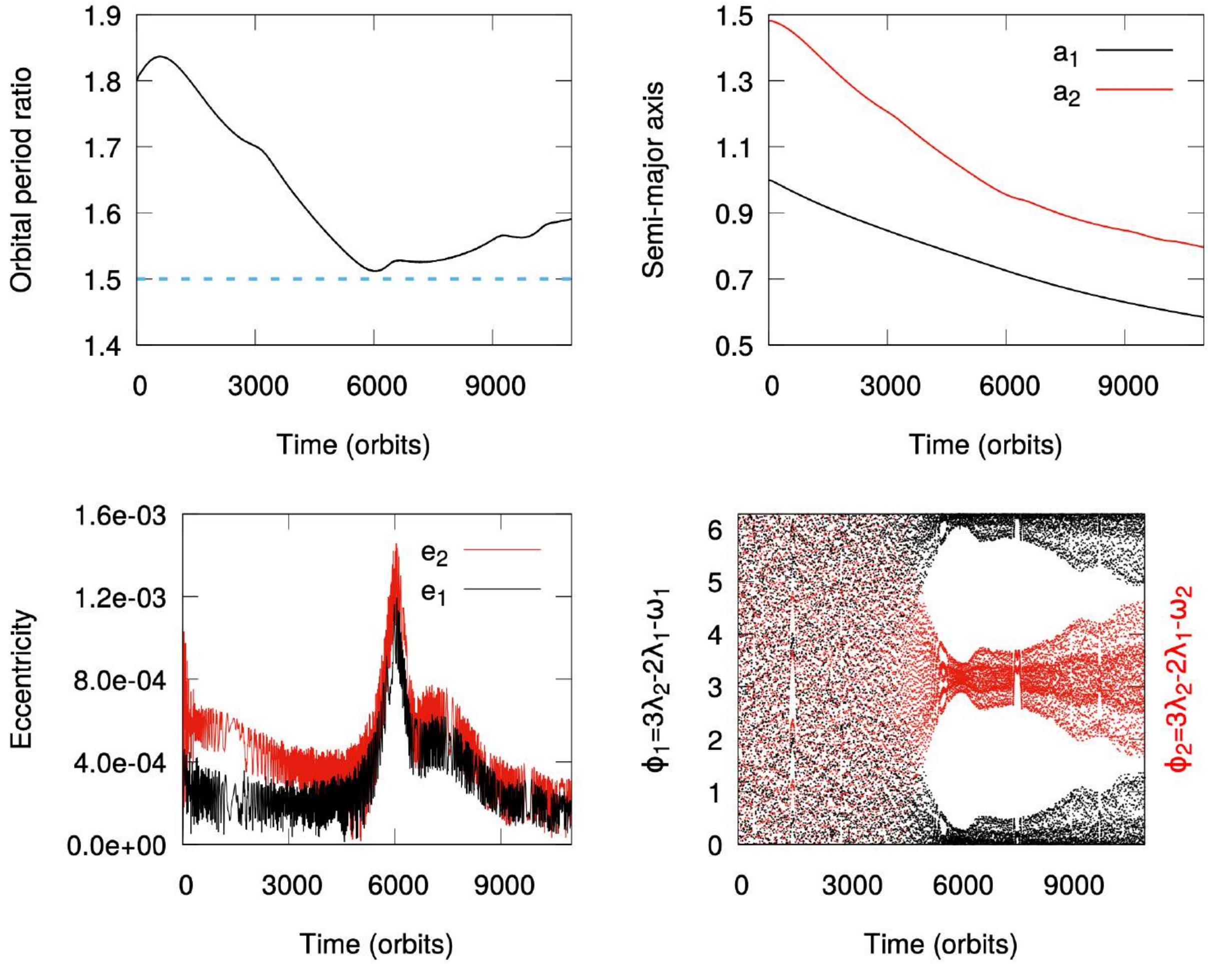

Figure 2: Cui et al.:The results of the hydrodynamical simulation of two super-Earths migrating in a protoplanetary disk. The masses of the inner and outer planets are taken to be $q_1 = 1.3 \times 10^{-5}$ and $q_2 = 1.185 \times 10^{-5}$, respectively. The initial surface density profile is adopted as $\Sigma(r) = 8 \times 10^{-5} r^{-1/2}$ while the aspect ratio and the viscosity are taken to be $h = 0.02$ and $\nu = 1.2 \times 10^{-6}$ in the simulation. The evolution of the orbital period ratio, the semi-major axes, the eccentricities and the 3:2 resonance angles are shown in the panels from top left to bottom right. The horizontal dashed blue line in the top left panel indicates the position of the 3:2 commensurability.

A molecular wind blows out of the Kuiper belt

Quentin Kral[1], J. E. Pringle[2], Aurélie Guilbert-Lepoutre[3], Luca Matrà[4], Julianne I. Moses[5], Emmanuel Lellouch[1], Mark C. Wyatt[2], Nicolas Biver[1], Dominique Bockelée-Morvan[1], Amy Bonsor[2], Franck Le Petit[6], G. Randall Gladstone[7,8]

[1] LESIA, Observatoire de Paris, Université PSL, CNRS, Sorbonne Université, Univ. Paris Diderot, Sorbonne Paris Cité, 5 place Jules Janssen, 92195 Meudon, France
[2] Institute of Astronomy, University of Cambridge, Madingley Road, Cambridge CB3 0HA, UK
[3] LGL-TPE, UMR 5276, CNRS, Claude Bernard Lyon 1 University, ENS Lyon, Villeurbanne Cedex, France
[4] School of Physics, National University of Ireland Galway, University Road, Galway, Ireland
[5] Space Science Institute, 4765 Walnut St, Suite B, Boulder, CO 80301, USA
[6] LERMA, Observatoire de Paris, Université PSL, CNRS, Sorbonne Université, Univ. Paris Diderot, Sorbonne Paris Cité, 5 place Jules Janssen, 92195 Meudon, France
[7] Southwest Research Institute, San Antonio, TX 78238, United States
[8] The University of Texas at San Antonio, San Antonio TX 78249, United States

Astronomy & Astrophysics, in press (2104.01035)

Context: Gas has been detected in many exoplanetary systems (>10 Myr), thought to be released in the destruction of volatile-rich planetesimals orbiting in exo-Kuiper belts.
Aims: In this letter, we aim to explore whether gas is also expected in the Kuiper belt (KB) in our Solar System.
Methods: To quantify the gas release in our Solar System, we use models for gas release that have been applied to extrasolar planetary systems, as well as a physical model that accounts for gas released due to the progressive internal warming of large planetesimals.
Results: We find that only bodies larger than about 4 km can still contain CO ice after 4.6 Gyr of evolution. This finding may provide a clue as to why Jupiter-family comets, thought to originate in the Kuiper belt, are deficient in CO compared to Oort-clouds comets. We predict that gas is still produced in the KB right now at a rate of 2×10^{-8} $M_{\oplus}$/Myr for CO and orders of magnitude more when the Sun was younger. Once released, the gas is quickly pushed out by the Solar wind. Therefore, we predict a gas wind in our Solar System starting at the KB location and extending far beyond with regards to the heliosphere with a current total CO mass of $\sim 2 \times 10^{-12}$ $M_{\oplus}$ (i.e. 20 times the CO quantity that was lost by the Hale-Bopp comet during its 1997 passage) and CO density in the belt of 3×10^{-7} cm^{-3}. We also predict the existence of a slightly more massive atomic gas wind made of carbon and oxygen (neutral and ionized) with a mass of $\sim 10^{-11}$ $M_{\oplus}$.
Conclusions: We predict that gas is currently present in our Solar System beyond the Kuiper belt and that although it cannot be detected with current instrumentation, it could be observed in the future with an in situ mission using an instrument similar to Alice on New Horizons with larger detectors. Our model of gas release due to slow heating may also work for exoplanetary systems and provide the first real physical mechanism for the gas observations. Lastly, our model shows that the amount of gas in the young Solar System should have been orders of magnitude greater and that it may have played an important role for, e.g., planetary atmosphere formation.

Download/Website: `https://arxiv.org/abs/2104.01035`

Contact: `quentin.kral@obspm.fr`

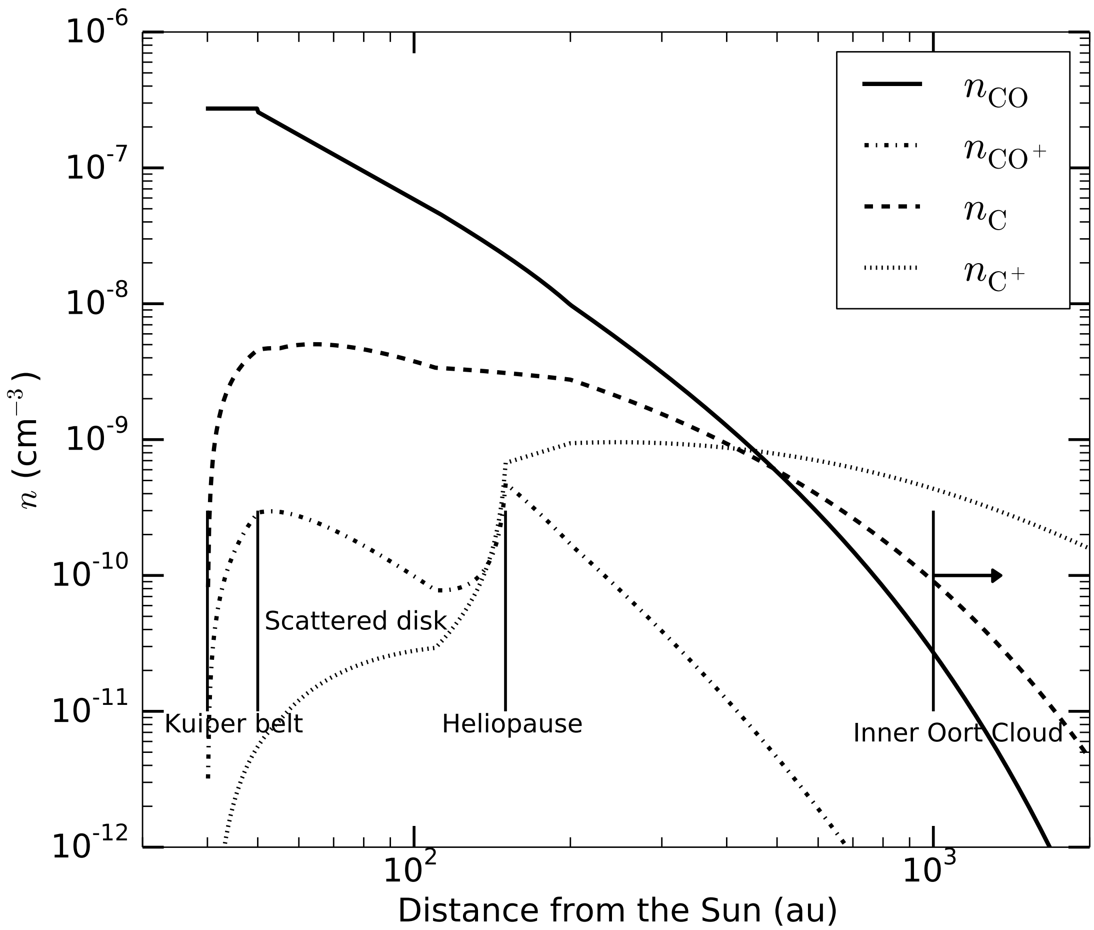

Figure 3: Kral et al.: Plot showing the CO gas disk wind in our Solar System and an atomic gas disk farther away. Results of our Kuiper belt gas model for the number density of CO (solid), C and O (dashed), C^+ and O^+ (dotted) and CO^+ (dash-dotted) as a function of distance in our Solar System. Note that the neutral and ionized oxygen number densities are roughly superimposed on those of carbon.

An analytical model for tidal evolution in co-orbital systems I. Application to exoplanets

J. Couturier[1], *P. Robutel*[1], *A. C. M. Correia*[2]

[1] IMCCE, UMR8028 CNRS, Observatoire de Paris, PSL Univ., Sorbonne Univ., 77 av. Denfert-Rochereau, 75014 Paris, France
[2] CFisUC, Departamento de Física, Universidade de Coimbra, 3004-516 Coimbra, Portugal

Celestial Mechanics and Dynamical Astronomy, published (2021CeMDA.133...37C)

Close-in co-orbital planets (in a 1:1 mean-motion resonance) can experience strong tidal interactions with the central star. Here, we develop an analytical model adapted to the study of the tidal evolution of those systems. We use a Hamiltonian version of the constant time-lag tidal model, which extends the Hamiltonian formalism developed for the point-mass case. We show that co-orbital systems undergoing tidal dissipation favour either the Lagrange or the anti-Lagrange configurations, depending on the system parameters. However, for all range of parameters and initial conditions, both configurations become unstable, although the timescale for the destruction of the system can be larger than the lifetime of the star. We provide an easy-to-use criterion to determine whether an already known close-in exoplanet may have an undetected co-orbital companion.

Download/Website: `https://rdcu.be/csAUg`

Contact: `jeremy.couturier@obspm.fr`

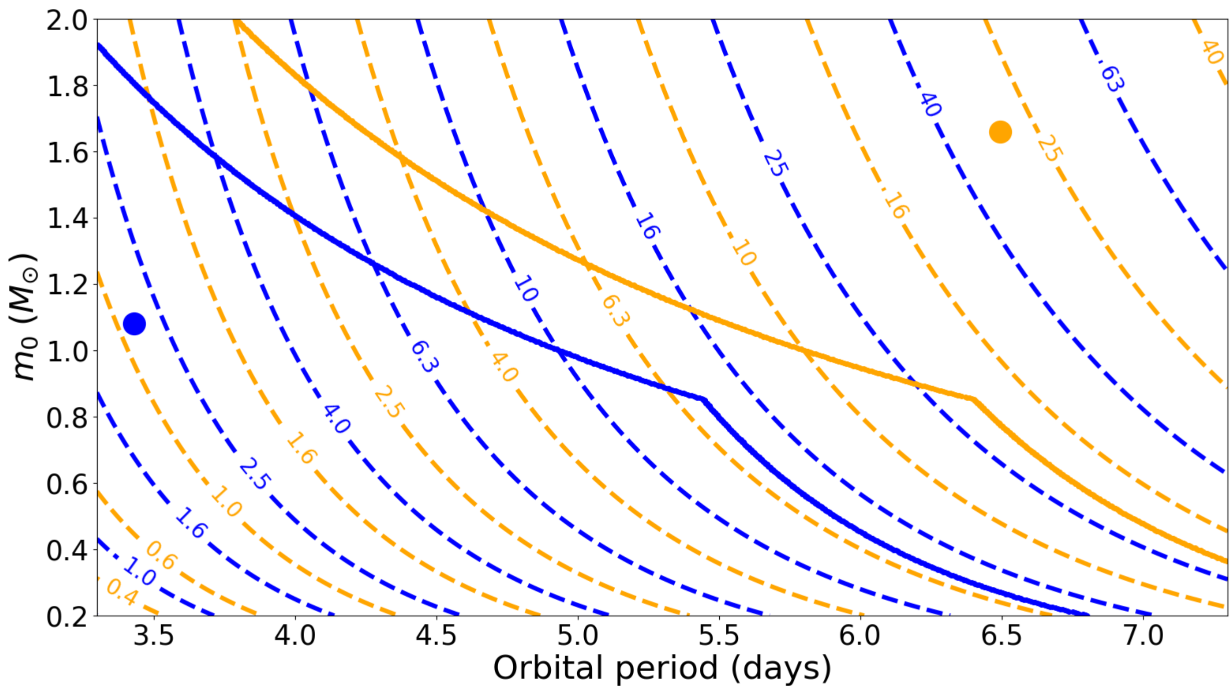

Figure 4: Couturier et al.: Disruption time (Gyr) of an hypothetical co-orbital system as a function of the orbital period of the observed planet and of the mass of the host star. The couple Saturn + Earth is plotted in orange, while the couple Earth + Earth is plotted in blue. The solid lines plot the minimum of the main sequence duration and of the age of the universe for both couples. Systems below these lines may have been already destroyed at the time of observation, but systems above outlive either their host star or the age of the universe. The blue and orange dots correspond to HD 158259 c and HD 102956 b. Note that, for a given orbital period, co-orbital systems live longer around a massive host star because they have a larger semi-major axis

3 Jobs and Positions

Associate Professor, Assistant Professor, T.C. Chamberlin Postdoctoral Fellowship

Edwin Kite

The Department of the Geophysical Sciences at the University of Chicago invites applications at the rank of **tenured Associate Professor**. The search is open to any area within the field of Earth and Planetary Sciences and related interdisciplinary research. We seek individuals who will lead world-class research programs and enhance the intellectual endeavors of the department and the university. For more information and to apply, please see https://apply.interfolio.com/92680
Review of applications will begin November 1, 2021 and will continue until the position is filled.

The Department of the Geophysical Sciences at the University of Chicago invites applications at the rank of **tenure-track Assistant Professor**. The search is open to any area within the field of Earth and Planetary Sciences and related interdisciplinary research. We seek individuals who will lead world-class research programs and enhance the intellectual endeavors of the department and the university. For more information and to apply, please see https://apply.interfolio.com/92678
Review of applications will begin November 1, 2021 and will continue until the position is filled.

The Department of the Geophysical Sciences at The University of Chicago invites applications for the **T.C. Chamberlin Postdoctoral Fellowship**. We seek outstanding scientists who lead creative investigations into the nature and evolution of the Earth and/or other planetary bodies–including their physics, biology, chemistry, climate, and history–and who have a desire to participate in the broad intellectual life of the department and the university. Ongoing research activities within the department can be found on the department website: https://geosci.uchicago.edu/.
We encourage people with interests in any aspect of Earth and Planetary Sciences to apply. To give a sense of the diverse interests of our Chamberlin Fellows, in recent years they have carried out investigations of planetary habitability, tropical cyclones, paleontology, and planetary dynamics, and geochronology.
Start date is negotiable, with a target of September 1, 2022. The initial term of the Fellowships will be one year, renewable for a second year. For more information and to apply, please see https://academicjobsonline.org/ajo/jobs/19246. Consideration of complete applications (those including letters of reference) will begin October 12, 2021.

Contact: `kite@uchicago.edu`

Postdoctoral Research Fellow in Exoplanet Atmospheres

Dr Matteo Brogi and Dr Heather Cegla
Centre for Exoplanets and Habitability, University of Warwick, Gibbet Hill Road, Coventry CV4 7AL, UK

University of Warwick, 1 October 2021 - 31 January 2022 (a later starting date can also be negotiated)

The University of Warwick seeks to appoint a motivated and driven Research Fellow within the Astronomy and Astrophysics Group. The initial appointment will be for 2 years.

The successful candidate will work with Dr Matteo Brogi on the project "Studying the atmospheres of TESS planets at high spectral resolution", funded by the Science and Technology Facilities Council (STFC). The post can flexibly focus on a number of relevant topics in high resolution spectroscopy, including data analysis, cross-correlation, and modelling of atmospheres. In addition, 25% of the post will be devoted to collaborating with Dr Heather Cegla and studying the effects of stellar variability on the measured spectra of exoplanets.

The Astrophysics group at Warwick is one of the UK's leading exoplanet research groups, and provides an excellent environment for a motivated Research Fellow to further their scientific career. The University of Warwick strongly values equity, diversity and inclusion, and the Physics Department will provide a healthy working environment, dedicated to outstanding scientific guidance, mentorship and personal development. We are committed to individuals with care giving duties and can offer flexible working hours. Applications for a part-time position will be considered.

Deadline for applications is 1 October 2021. Funding is available for a start between 1 October 2021 and 31 January 2022 (a later starting date can also be negotiated). For more details on the position, candidate requirements/responsibilities, and the application procedure please see url below.

Download/Website: `https://bit.ly/WarwickExoplanetResearchFellow`

Contact: `M.Brogi [at] warwick.ac.uk`

Call for Applications for the 2022 NASA Hubble Fellowship Program

Dr. Andrew Fruchter, Space Telescope Science Institute

Dr. Dawn M. Gelino, NASA Exoplanet Science Institute

Dr. Paul Green, Smithsonian Astrophysical Observatory

Applications Due: November 4, 2021 at 7:00 PM EST (4:00 PM PST 24:00 UTC),

On behalf of the NASA Astrophysics Division, the Space Telescope Science Institute (STScI) announces the call for applications for postdoctoral fellowships under the NASA Hubble Fellowship Program (NHFP) beginning in the fall of 2022. The NHFP encompasses the areas of astrophysics previously covered by the NASA Einstein, Hubble, and Sagan Fellowships. To continue the legacy of these programs, fellows will be named as Einstein, Hubble, or Sagan Fellows, depending on which of the three major NASA Astrophysics science questions most closely aligns with their proposed research.

The NHFP provides an opportunity for recent postdoctoral scientists to conduct independent research that contributes to any area of NASA Astrophysics. The research will be carried out at United States host institutions chosen by each fellow, subject to a limitation on the number of fellows that can be hosted by any one institution.

The NHFP is open to English-speaking applicants of any nationality who have earned their doctoral degrees in astronomy, physics, or related disciplines on or after January 1, 2018, or who will receive their degree before September 2022. Graduate-student awardees who have not yet received their doctoral degree at the time of application must present evidence of having completed all requirements for the degree before commencing their fellowships. The NHFP provides salary support plus benefits for up to three years, and an additional allowance for travel and other research costs. Contingent upon NASA funding, 24 new fellowships will be awarded for 2022.

Qualified applicants will receive consideration without regard to race, creed, color, age, gender, gender identity or expression, sexual orientation, veteran status, disability, or national origin. Women and members of minority groups are strongly encouraged to apply.

We have extended eligibility this year from three years to four years past PhD to give another opportunity to the many individuals adversely affected by the pandemic, whose final year of eligibility would normally have been last year. As a result, this year we will not be making any eligibility exceptions based on individual personal circumstances.

Applicants should follow the instructions in the Announcement of Opportunity (http://nhfp.stsci.edu).

Important Dates

- November 4, 2021, 7:00 PM EST (4:00 PM PST 24:00 UTC): Applications due
- November 11, 2021: Letters of reference due (applications are due one week before the letters)

Offers will be made in early February 2022 and new appointments should begin on or about September 1, 2022.

Download/Website: `http://nhfp.stsci.edu`
Contact: `nhfp@stsci.edu`

Research Associate with Tenure Track in Exoplanet Atmosphere modelling

at the Space Research Institute, Graz, Austria, deadline: 30 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 Research Associate with Tenure Track in Exoplanet Atmosphere modelling (Job-ID: IWF100RA121).

The successful candidate will be part of Prof Christiane Helling's newly forming research group Complex Atmosphere Modelling which is part of the ÖAW's effort to expand the theme of exoplanet research at the IWF Graz. The successful candidate is expected to work on 3D climate modelling for diverse exoplanets.

The applicant is expected to have:

- Outstanding international recognition.
- A documented background on simulating 3D atmospheres for a diversity of exoplanet types with a clear focus on fundamental physics and chemistry.
- Experiences in solar system research and space mission exploitation.
- Experiences in working in teams with diverse ethnical and scientific backgrounds.

The applicant must hold a PhD in physics, astrophysics or geoscience. Furthermore, it would be beneficial if the candidate has supervised students, coordinated teams, as well as demonstrated a clear input of theoretical work for observational efforts.

The appointment begins as early as July 1, 2022 and will be for six years initially with the option of Tenure after 6 years. The annual gross salary will be Euro 54.661,30 (W5/1) according to the salary scheme of the Austrian Academy of Sciences.

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

Applications include (1) curriculum vitae, (2) list of publications, (3) statement of the applicant's research experience (max 2 pages) and a research plan (max 2 pages), (4) certificates for full academic record, and (5) three names of references with the full contact information. Please send the application in PDF format, mentioning Job ID: IWF100RA121, to cosima.muck@oeaw.ac.at by November 30, 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`

4 Conferences

Star-Planet Connection

R. J. De Rosa[1], *H. Korhonen*[1], *et al.*
[1] European Southern Observatory, Chile

Online, 25-29 October 2021

The detection and characterization of extrasolar planets is a field that has undergone rapid advancements in the past decades. As we push towards the detection of lower-mass planets around Sun-like stars via both direct and indirect techniques our understanding of the host star becomes increasingly important.

In this workshop we will cover the following topics:

- Fundamental stellar parameters that affect exoplanet detection/interpretation
- Stellar abundances and their effect on exoplanet formation
- Impact of stellar multiplicity on exoplanets
- Stellar activity effects on detecting exoplanets

We aim to identify what aspects of our understanding of stellar properties are limiting our ability to measure and characterize extrasolar planets, to present new ideas on how to overcome them, and to develop new collaborations between researchers studying extrasolar planets and those studying the properties of the stars they orbit.

In addition, the conference will include time allocated for discussions and social interactions. The conference will have dedicated breakout groups on Slack to foster discussions and post files.

Download/Website: `https://www.eso.org/sci/meetings/2021/StarPlanetConnection2021.html`

Contact: `SPConnection@eso.org`

In the Spirit of Bernard Lyot: The Direct Detection and Characterization of Exoplanets and Circumstellar Disks

Matthew Kenworthy on behalf of the SOC
Leiden Observatory

Scheltema Conference Centre, 27 June - 1 July, 2022

The conference will take place at the Scheltema, in the centre of Leiden, the Netherlands, both in person and with online participation.

Conference purpose and scope

In the last 25 years, the field of exoplanet studies has rapidly evolved to become one of the most active in astronomy. The search for and study of these objects occupy a sizable fraction of observing time on large facilities worldwide, and major advances can be credited to novel instrument designs, new hardware, and innovative data processing techniques. Many ambitious new ground- and space-based projects are currently being developed to push the limits even further.

Exoplanet research relies on several complementary observational techniques (e.g. radial velocity, transit, astrometry). After years of developments and the start of operation of a new generation of high contrast "planet finders", direct imaging is emerging as another major contributor to this exciting enterprise. This method will help to develop a more complete picture of the full diversity of exoplanet systems and circumstellar disks and provides a unique means to obtain information about the atmospheric properties of young gas giants.

Topics

This conference will be focused on the direct detection and characterization of exoplanets and circumstellar disks, and new technological methods for their detection:

- Development of New Techniques and Instrumentation
- High-contrast observation and image processing techniques
- New concepts and advances for high-contrast imaging instrumentation
- Synergy of direct imaging with other techniques (RV, astrometry, transits, etc.)
- Near- and long-term future projects, space missions, and ELTs
- Upgrades of ground based instruments
- Science Results
- Current surveys, results & population statistics
- Characterization of known imaged planets and brown dwarfs
- Planet formation, accreting protoplanets, evolution and atmosphere models
- Debris, protoplanetary and circumplanetary disks
- The impact of ALMA, Gaia, and JWST observations
- Planetary system architecture & dynamics, planet-disk interactions
- Host star properties (ages, metallicity, rotation, etc.)

We strongly encourage students to come and will provide some limited grants for student participants.

Download/Website: `http://lyot2022.org/`

Contact: `kenworthy@strw.leidenuniv.nl`

5 Exoplanet Archive Updates

August Updates at the NASA Exoplanet Archive

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

Pasadena CA USA, September 14, 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`).

August 26, 2021

40 New Planets

There are 40 new planets this week—37 of them found lurking in K2 data as validated planet candidates, as described in de Leon et al. (2021) (`https://bit.ly/38z3Qd1`).

We've also added L 98-59 e, a fourth planet found in the same system as L 98-59 b, the rocky, innermost planet that has half the mass of Venus—–making it the lowest-mass exoplanet ever measured with the radial velocity technique. The new d planet and the refined-mass b planet are described in a media release (`https://bit.ly/2WQ9PYH`) and in Demangeon et al. (2021) (`https://bit.ly/3tctopO`).

Here is the full list of new planets: L 98-59 e, TOI-2202 b & c, K2-185 c, K2-268 d, e, & f, K2-304 c, K2-307 c, K2-330 b, K2-331 c & b, K2-332 b, K2-333 b, K2-334 b, K2-335 b, K2-336 b, K2-337 b, K2-338 b, K2-339 b, K2-340 b, K2-341 b, K2-342 b, K2-343 b & c, K2-344 b, K2-345 b, K2-346 b, K2-347 b, K2-348 b & c, K2-349 b, K2-350 b & c, K2-351 b, K2-352 b, c & d, K2-353 b, and K2-354 b.

August 19, 2021

Cuckoo for COCONUTS-2 b

We've added COCONUTS-2 b, a gas giant discovered by the COol Companions ON Ultrawide orbiTS (COCONUTS) survey. It also has the distinction of being the closest directly imaged exoplanet found so far. Read the University of Hawaii media release (`https://bit.ly/3kMnWpX`) and the discovery paper by Zhang et al. (`https://bit.ly/3kHXZrG`)

We've also added five more planets: TOI-2406 b, TOI-532 b, and TOI-431 b, c, & d.

August 12, 2021

Five New Planets

There are five new planets this week, some with interesting backstories.

Three Kepler planets, KIC 8121913 b (Kepler-1705 b), KIC 10068024 b (Kepler-1706 b), and KIC 5479689 b (Kepler-1707 b), were found using a lesser-known detection technique known as orbital brightness modulation, where each planet's orbital phase is coupled with the periodic modulations of reflected stellar light, ellipsoidal modulations, and Doppler beaming. Though this method has been used in the past to discover and confirm exoplanets, it's not common. In fact, only six other planets have been found this way. Learn more about the technique in the discovery paper by Lillo-Box, Milholland & Laughlin (`https://bit.ly/38DTxEC`).

Also, another planet has been found in the AU Microscopii (AU Mic) system, which was in the news last year because of its close proximity to Earth, giving us an excellent opportunity to study how planets and their atmospheres form. AU Mic's first planet is commemorated in a NASA poster (`https://go.nasa.gov/3gZK5Ae`).

The fifth and final planet, KMT-2019-BLG-0371L b, was found with microlensing, so it has been added to the Planetary Systems Tables and Planetary Systems Composite Parameters tables with the other new planets this week, as well as the Microlensing Table.

New Data, Including nu 2 Lupi

We've also added new data for known systems HD 97658 b and HD 183579, as well as the three-planet nu 2 Lupi system (also known as HD 136352). nu 2 Lupi d was serendipitously found to transit, making it the longest-period planet known to transit a star visible to the naked eye, and a compelling target for further investigation.

August 5, 2021

An Assortment of Six Planets

This week, we've amassed six planets with masses spanning a wide range—from sub-Neptunes to Jupiters to super-Jupiters to brown dwarfs! The new planets are: TOI-1062 b & c, TOI-1278 b, KMT-2018-BLG-1976L b, KMT-2018-BLG-1996L b, and OGLE-2019-BLG-0954L b.

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

6 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

A multispecies pseudoadiabat for simulating condensable-rich exoplanet atmospheres by *Robert Graham* – talk/380

CloudNineCon:

Clouds in Brown Dwarfs and Exoplanet Observations by *Hannah Wakeford & Dániel Apai* – talk/ 381
How will we study cloud-driven variability with ELTs? by *Beth Biller* – talk/382
Cleaning Our Cloudy and Hazy lens for Temperate Exoplanets by *Austin H. Dymont* – talk/383
Clouds in the lab and microphysical models by *Peter Gao & Sarah Moran* – talk/384
Exploring Exoplanetary Hazes from Laboratory Simulations by *Chao He* – talk/385
Mineral Snowflakes: Porosity and Non-Sphericity of Cloud Particles by *Dominic Samra* – talk/386
Empirically Determining Substellar Cloud Compositions in the era of JWST by *Jessica Luna* – talk/387
Clouds in transiting planet and brown dwarf retrievals by *Ryan MacDonald & Ben Burningham* – talk/388
A New Sedimentation Model for Greater Cloud Diversity in Giant Exoplanets and Brown Dwarfs by *Caoimhe Rooney* – talk/389
Blind spots in treatment of clouds in atmospheric retrievals by *Luis Welbanks* – talk/390
Simulating haze radiative feedback in 3D general circulation models of hot Jupiters by *Maria Steinrueck* – talk/391
Clouds in 3-d models of planets and brown dwarfs by *Emily Rauscher & Xianyu Tan* – talk/ 392
Joint retrievals of low-resolution and high-resolution spectra for a cloudy brown dwarf companion near the L/T transition by *Jerry Xuan* – talk/393

7 As seen on astro-ph

The following list contains exoplanet related entries appearing on astro-ph in August 2021.

Ausgut 2021

astro-ph/2108.00457: **The emergence of a summer hemisphere jet in planetary atmospheres** by *Ilai Guendelman, Darryn W. Waugh, Yohai Kaspi*

astro-ph/2108.00670: **Identify Light Curve Signals with Deep Learning Based Object Detection Algorithm. I. Transit Detection** by *Kaiming Cui et al.*

astro-ph/2108.00792: **On the importance of wave planet interactions for the migration of two super-Earths embedded in a protoplanetary disk** by *Zijia Cui et al.*

astro-ph/2108.00878: **Dust growth, fragmentation and self-induced dust traps in PHANTOM** by *Arnaud Vericel et al.*

astro-ph/2108.00907: **The Substructures in Disks undergoing Vertical Shear Instability: II. Observational Predictions for the Dust Continuum** by *Diana Blanco et al.*

astro-ph/2108.00949: **Synthetic Evolution Tracks of Giant Planets** by *Simon Mueller, Ravit Helled*

astro-ph/2108.00995: **Birth and decline of magma oceans. Part 2: wobbling thermal history of early accreted planetesimals** by *Cyril Sturtz et al.*

astro-ph/2108.01082: **Dynamics of Colombo's Top: Tidal Dissipation and Resonance Capture, With Applications to Oblique Super-Earths, Ultra-Short-Period Planets and Inspiraling Hot Jupiters** by *Yubo Su, Dong Lai*

astro-ph/2108.01277: **Comparison of planetary H alpha-emission models: A new correlation with accretion luminosity** by *Yuhiko Aoyama et al.*

astro-ph/2108.01348: **A new formation scenario of a counter-rotating circumstellar disk: spiral-arm accretion from a circumbinary disk in a triple protostar system** by *Daisuke Takaishi, Yusuke Tsukamoto, Yasushi Suto*

astro-ph/2108.01357: **Prospects for detecting exoplanets around double white dwarfs with LISA and Taiji** by *Yacheng Kang, Chang Liu, Lijing Shao*

astro-ph/2108.01423: **Planet-driven density waves in protoplanetary discs: numerical verification of nonlinear evolution theory** by *Nicolas P. Cimerman et al.*

astro-ph/2108.01541: **Axisymmetric simulations of the convective overstability in protoplanetary discs** by *Robert J. Teed, Henrik H. Latter*

astro-ph/2108.01604: **Linking Uranus' temperature profile to wind-induced magnetic fields** by *Deniz Soyuer, Ravit Helled*

astro-ph/2108.01675: **Tidally distorted barytropes and their Roche limits, with application to WASP-12b** by *Victoria Antonetti, Jeremy Goodman*

astro-ph/2108.01790: **A Comparative Study of Atmospheric Chemistry with VULCAN** by *Shang-Min Tsai et al.*

astro-ph/2108.02149: **The changing face of AU Mic b: stellar spots, spin-orbit commensurability, and Transit Timing Variations as seen by CHEOPS and TESS** by *Gy.M. Szabo et al.*

astro-ph/2108.02208: **TESS-Keck Survey IX: Masses of Three Sub-Neptunes Orbiting HD 191939 and the Discovery of a Warm Jovian Plus a Distant Sub-Stellar Companion** by *Jack Lubin et al.*

astro-ph/2108.02294: **TESS Giants Transiting Giants I: A Non-inflated Hot Jupiter Orbiting a Massive Subgiant** by *Nicholas Saunders et al.*

astro-ph/2108.02305: **Constraining the Orbit and Mass of Eps Eridani b with Radial Velocities, Hipparcos IAD-Gaia DR2 Astrometry, and Multi-epoch Vortex Coronagraphy Upper Limits** by *Jorge Llop-Sayson et al.*

astro-ph/2108.02310: **TOI-431/HIP 26013: a super-Earth and a sub-Neptune transiting a bright, early K dwarf, with a third RV planet** by *Ares Osborn et al.*

astro-ph/2108.02890: **Angular momentum distributions for observed and modeled exoplanetary systems** by *Jonathan H. Jiang et al.*
astro-ph/2108.02901: **Extreme Variability of the V488 Persei Debris Disk** by *G. H. Rieke et al.*
astro-ph/2108.02903: **Transit Origami: A Method to Coherently Fold Exomoon Transits in Time Series Photometry** by *David Kipping*
astro-ph/2108.03102: **Quantitative polarimetry of the disk around HD 169142** by *C. Tschudi, H.M. Schmid*
astro-ph/2108.03160: **Dynamical stability of giant planets: the critical adiabatic index in the presence of a solid core** by *Suman Kumar Kundu et al.*
astro-ph/2108.03323: **Warm terrestrial planet with half the mass of Venus transiting a nearby star** by *Olivier D. S. Demangeon et al.*
astro-ph/2108.03343: **On the Need for a Classification System for Consistent Characterization of the Composition of Planetary Bodies** by *David G. Russell*
astro-ph/2108.03678: **Long-term dynamical survival of deep Earth coorbitals** by *Apostolos A. Christou, Nikolaos Georgakarakos*
astro-ph/2108.03700: **V488 Per revisited: no strong mid-infrared emission features and no evidence for stellar/sub-stellar companions** by *Swetha Sankar et al.*
astro-ph/2108.03759: **Does detecting water vapors on rocky planets indicate the presence of oceans?: An insight from self-consistent mantle degassing models** by *Yoshinori Miyazaki, Jun Korenaga*
astro-ph/2108.04018: **Disks in close binary stars: gamma-Cephei revisited** by *Lucas M. Jordan et al.*
astro-ph/2108.04101: **Spitzer Dayside Emission of WASP-34b** by *Ryan C. Challener et al.*
astro-ph/2108.04143: **Idealized 2D Cloud-Resolving Simulations for Tidally Locked Habitable Planets** by *Qiyu Song et al.*
astro-ph/2108.04419: **Photochemistry and Spectral Characterization of Temperate and Gas-Rich Exoplanets** by *Renyu Hu*
astro-ph/2108.04701: **Dust in brown dwarfs and extra-solar planets. VIII. TiO2 seed formation: 3D Monte Carlo versus kinetic approach** by *C. Koehn et al.*
astro-ph/2108.04745: **Unveiling shrouded oceans on temperate sub-Neptunes via transit signatures of solubility equilibria vs. gas thermochemistry** by *Renyu Hu et al.*
astro-ph/2108.04778: **TESS Input Catalog versions 8.1 and 8.2: Phantoms in the 8.0 Catalog and How to Handle Them** by *Martin Paegert et al.*
astro-ph/2108.04880: **The importance of thermal torques on the migration of planets growing by pebble accretion** by *O. M. Guilera et al.*
astro-ph/2108.05321: **Ross 19B: An Extremely Cold Companion Discovered via the Backyard Worlds: Planet 9 Citizen Science Project** by *Adam C. Schneider et al.*
astro-ph/2108.05323: **A pair of warm giant planets near the 2:1 mean motion resonance around the K-dwarf star TOI-2202** by *Trifon Trifonov et al.*
astro-ph/2108.05358: **A Search for Planetary Metastable Helium Absorption in the V1298 Tau System** by *Shreyas Vissapragada et al.*
astro-ph/2108.05417: **Habitability Models for Astrobiology** by *Abel Mendez et al.*
astro-ph/2108.05621: **37 New Validated Planets in Overlapping K2 Campaigns** by *J. P. de Leon et al.*
astro-ph/2108.05739: **Stellar versus Galactic: The intensity of energetic particles at the evolving Earth and young exoplanets** by *D. Rodgers-Lee et al.*
astro-ph/2108.05749: **A million asteroid observations in the Sloan Digital Sky Survey** by *A. V. Sergeyev, B. Carry*
astro-ph/2108.06345: **Cooling-Induced Vortex Decay in Keplerian Disks** by *Jeffrey Fung, Tomohiro Ono*
astro-ph/2108.07123: **A Circumplanetary Disk Around PDS70c** by *Myriam Benisty et al.*
astro-ph/2108.07303: **Reimagining the water snowline** by *Arthur D. Bosman, Edwin A. Bergin*
astro-ph/2108.07679: **If you like C/O variations, you should have put a ring on it** by *Nienke van der Marel et al.*
astro-ph/2108.07762: **Librations of a body composed of a deformable mantle and a fluid core** by *Clodoaldo*

Ragazzo et al.

astro-ph/2108.07811: **On the Terminal Spins of Accreting Stars and Planets: Boundary Layers** by *Alexander J. Dittmann*

astro-ph/2108.07815: **Long-term stability of planets in and around binary stars** by *Harry A. Ballantyne*

astro-ph/2108.08034: **Drifting inwards in protoplanetary discs II: The effect of water on sticking properties at increasing temperatures** by *C. Pillich et al.*

astro-ph/2108.08315: **Resilience of Planetesimal Formation in Weakly-Reinforced Pressure Bumps** by *Daniel Carrera et al.*

astro-ph/2108.08323: **On the Detection of Exomoons Transiting Isolated Planetary-Mass Objects** by *Mary Anne Limbach et al.*

astro-ph/2108.08382: **Why Geosciences and Exoplanetary Sciences Need Each Other** by *Oliver Shorttle, Natalie Hinkel, Cayman Unterborn*

astro-ph/2108.08383: **Compositional Diversity of Rocky Exoplanets** by *Keith Putirka et al.*

astro-ph/2108.08384: **Exogeology from Polluted White Dwarfs** by *Siyi Xu, Amy Bonsor*

astro-ph/2108.08385: **The Diversity of Exoplanets: From Interior Dynamics to Surface Expressions** by *Maxim D. Ballmer, Lena Noack*

astro-ph/2108.08386: **Leveraging Models to Constrain the Climates of Rocky Exoplanets** by *Thaddeus D. Komacek et al.*

astro-ph/2108.08387: **The air over there: exploring exoplanet atmospheres** by *Laura Schaefer, Vivien Parmentier*

astro-ph/2108.08388: **Starting Life and Searching for Life on Rocky Planets** by *Paul B Rimmer, Sukrit Ranjan, Sarah Rugheimer*

astro-ph/2108.08389: **Confirmation of Iron Emission Lines and Non-detection of Molecules on the Dayside of KELT-9b with MAROON-X** by *David H. Kasper et al.*

astro-ph/2108.08390: **Characterizing exoplanetary atmospheres at high resolution with SPIRou: Detection of water on HD 189733 b** by *Anne Boucher et al.*

astro-ph/2108.08637: **The water-ice feature in near-infrared disk-scattered light around HD 142527: Micron-sized icy grains lifted up to the disk surface?** by *Ryo Tazaki et al.*

astro-ph/2108.08749: **High-contrast integral field spectropolarimetry of planet-forming disks with SCExAO/CHARIS** by *Kellen Lawson et al.*

astro-ph/2108.08851: **H-Alpha Variability of V1298 Tau c** by *Everett Schlawin et al.*

astro-ph/2108.08880: **Merging Criteria for Planetesimal Collisions** by *Takashi Shibata, Eiichiro Kokubo, Natsuki Hosono*

astro-ph/2108.08889: **K2, Spitzer, and TESS Transits of Four Sub-Neptune Exoplanets** by *Alison Duck et al.*

astro-ph/2108.09257: **Terrestrial planet formation in a circumbinary disc around a coplanar binary** by *Anna C. Childs, Rebecca G. Martin*

astro-ph/2108.09325: **From Warm Planets to Perpendicular Hot Planets** by *Rebekah I. Dawson, Simon H. Albrecht*

astro-ph/2108.09326: **A Solar System formation analogue in the Ophiuchus star-forming complex** by *John C. Forbes, Joao Alves, Douglas N. C. Lin*

astro-ph/2108.09607: **Approximating Orbits in a Rotating Gravity Field with Oblateness and Ellipticity Perturbations** by *Ethan Burnett, Hanspeter Schaub*

astro-ph/2108.09973: **Grain alignment and rotational disruption by radiative torques in exoplanet atmospheres** by *Thiem Hoang (KASI & UST), A. Lazarian (UW-Madison)*

astro-ph/2108.10105: **Deep learning for surrogate modelling of 2D mantle convection** by *Siddhant Agarwal et al.*

astro-ph/2108.10198: **The HARPS search for southern extra-solar planets. XLVI: 12 super-Earths around the solar type stars HD39194, HD93385, HD96700, HD154088, and HD189567** by *N. Unger et al.*

astro-ph/2108.10362: **Stellar Obliquities in Long-period Exoplanet Systems (SOLES) I: The Spin-Orbit Alignment of K2-140 b** by *Malena Rice et al.*

astro-ph/2108.10486: **Dust Settling and Clumping in MRI Turbulent Outer Protoplanetary Disks** by *Ziyan Xu, Xue-Ning Bai*

astro-ph/2108.10695: **Stability of Polycyclic Aromatic Hydrocarbon Clusters in Protoplanetary Disks** by *K. Lange, C. Dominik, A. G. G. M. Tielens*

astro-ph/2108.10804: **Optimization Applied to Selected Exoplanets** by *Shi Yuan Ng et al.*

astro-ph/2108.10888: **Habitability and Biosignatures of Hycean Worlds** by *Nikku Madhusudhan, Anjali A. A. Piette, Savvas Constantinou*

astro-ph/2108.10918: **Constraining the radius and atmospheric properties of directly imaged exoplanets through multi-phase observations** by *Oscar Carrion-Gonzalez et al.*

astro-ph/2108.11028: **Follow-up photometry in another band benefits reducing *Kepler*'s false positive rates** by *Mu-Tian Wang et al.*

astro-ph/2108.11282: **Constraining protoplanetary disc mass using the GI wiggle** by *J.P. Terry et al.*

astro-ph/2108.11387: **Investigating protoplanetary disc cooling through kinematics: analytical GI wiggle** by *Cristiano Longarini et al.*

astro-ph/2108.11403: **TOI-1518b: A Misaligned Ultra-hot Jupiter with Iron in its Atmosphere** by *Samuel H. C. Cabot et al.*

astro-ph/2108.11450: **No Large Dependence of Planet Frequency on Galactocentric Distance** by *Naoki Koshimoto et al.*

astro-ph/2108.11532: **Structures of secular resonances for inner test particles in hierarchical planetary systems** by *Hanlun Lei*

astro-ph/2108.11541: **A new expansion of planetary disturbing function and applications to interior, co-orbital and exterior resonances with planets** by *Hanlun Lei*

astro-ph/2108.11822: **The power of wavelets in analysis of transit and phase curves in presence of stellar variability and instrumental noise I. Method and validation** by *Sz. Csizmadia et al.*

astro-ph/2108.11869: **Exploring the link between star and planet formation with Ariel** by *Diego Turrini et al.*

astro-ph/2108.11894: **Machine Learning for Discovering Effective Interaction Kernels between Celestial Bodies from Ephemerides** by *Ming Zhong, Jason Miller, Mauro Maggioni*

astro-ph/2108.11965: **A Radiatively Driven Wind from the eta Tel Debris Disk** by *Allison Youngblood et al.*

astro-ph/2108.12057: **SPORK That Spectrum: Increasing Detection Significances from High-Resolution Exoplanet Spectroscopy with Novel Smoothing Algorithms** by *Kaitlin C. Rasmussen et al.*

astro-ph/2108.12458: **Multiple moist climate equilibrium states on arid rocky M-dwarf planets: A last-saturation tracer analysis** by *Feng Ding, Robin D. Wordsworth*

astro-ph/2108.12526: **Correcting the effect of stellar spots on ARIEL transmission spectra II.The limb darkening effect** by *G. Cracchiolo et al.*

astro-ph/2108.12548: **Characterization of the dust content in the ring around Sz 91: indications for planetesimal formation?** by *Karina Mauco et al.*

astro-ph/2108.12650: **Milankovitch Cycles for a Circumstellar Earth-analog within Alpha Centauri-like Binaries** by *Billy Quarles, Gongjie Li, Jack J. Lissauer*

astro-ph/2108.12672: **Abiotic molecular oxygen production – ionic pathway from sulphur dioxide** by *Mans Wallner et al.*

astro-ph/2108.12902: **A multispecies pseudoadiabat for simulating condensable-rich exoplanet atmospheres** by *R.J. Graham et al.*

astro-ph/2108.13429: **Preliminary Evidence That Protoplanetary Disks Eject More Mass Than They Retain** by *Amir Siraj, Abraham Loeb*

astro-ph/2108.13437: **Obliquity Constraints on the Planetary-mass Companion HD 106906 b** by *Marta L. Bryan et al.*

astro-ph/2108.13712: **The all-sky PLATO input catalogue** by *M. Montalto*

astro-ph/2108.13721: **The transmission spectrum of WASP-17 b from the optical to the near-infrared wavelengths: combining STIS, WFC3 and IRAC datasets** by *Arianna Saba et al.*

astro-ph/2108.13795: **Acoustic and inertial modes in planetary-like rotating ellipsoids** by *J. Vidal, D. Cabron*

astro-ph/2108.01085: **Binaries are softer than they seem: Effects of external potential on the scattering dynamics of binaries** by *Yonadav Barry Ginat, Hagai B. Perets*

astro-ph/2108.01917: **Giant white-light flares on fully convective stars occur at high latitudes** by *Ekaterina Ilin et al.*

astro-ph/2108.02499: **Using Source Proper Motion to Validate Terrestrial Parallax: OGLE-2019-BLG-1058** by *In-Gu Shin et al.*

astro-ph/2108.03161: **Empirically Determining Substellar Cloud Compositions in the era of JWST** by *Jessica L. Luna, Caroline V. Morley*

astro-ph/2108.03785: **A search for transits among the delta Scuti variables in Kepler** by *Daniel R. Hey et al.*

astro-ph/2108.04833: **Full characterization of the instrumental polarization effects of the spectropolarimetric mode of SCExAO-CHARIS** by *G. J. Joost 't Hart et al.*

astro-ph/2108.05001: **Propionamide (C2H5CONH2): The largest peptide-like molecule in space** by *Juan Li et al.*

astro-ph/2108.05153: **The Role of Terahertz and Far-IR Spectroscopy in Understanding the Formation and Evolution of Interstellar Prebiotic Molecules** by *Duncan V. Mifsud et al.*

astro-ph/2108.06403: **LUVOIR-ECLIPS closed-loop adaptive optics performance and contrast predictions** by *Axel Potier et al.*

astro-ph/2108.06438: **The Pandora SmallSat: Multiwavelength Characterization of Exoplanets and their Host Stars** by *Elisa V. Quintana et al.*

astro-ph/2108.08327: **Detection of H2 in the TWA 7 System: A Probable Circumstellar Origin** by *Laura Flagg et al.*

astro-ph/2108.09109: **A 20-Second Cadence View of Solar-Type Stars and Their Planets with TESS: Asteroseismology of Solar Analogs and a Re-characterization of pi Men c** by *Daniel Huber et al.*

astro-ph/2108.10296: **Close stellar flybys common in low-mass clusters** by *Susanne Pfalzner, Amith Govind*

astro-ph/2108.10485: **Global Non-ideal Magnetohydrodynamic Simulations of Protoplanetary Disks with Outer Truncation** by *Haifeng Yang, Xue-Ning Bai*

astro-ph/2108.10670: **TESS observations of flares and quasi-periodic pulsations from low mass stars and potential impact on exoplanets** by *Gavin Ramsay et al.*

astro-ph/2108.11001: **Detailed elemental abundances of binary stars: Searching for signatures of planet formation and atomic diffusion** by *Fan Liu et al.*

astro-ph/2108.11332: **Self-optimizing adaptive optics control with Reinforcement Learning for high-contrast imaging** by *Rico Landman et al.*

astro-ph/2108.11780: **TESS Data for Asteroseismology: Light Curve Systematics Correction** by *Mikkel N. Lund et al.*

astro-ph/2108.12040: **Chemical evidence for planetary ingestion in a quarter of Sun-like stars** by *Lorenzo Spina et al.*

astro-ph/2108.12332: **MRI-active inner regions of protoplanetary discs. II. Dependence on dust, disc and stellar parameters** by *Marija R. Jankovic et al.*

astro-ph/2108.12462: **First Experimental Results of the Fast Atmospheric Self-coherent Camera Technique on the Santa cruz Extreme Adaptive optics Laboratory Testbed: Demonstration of High Speed Focal Plane Wavefront Control of Residual Atmospheric Speckles** by *Benjamin L. Gerard et al.*

astro-ph/2108.04013: **Vortex solution in elliptic coordinates** by *Wladimir Lyra*

astro-ph/2108.04991: **A low-dissipation HLLD approximate Riemann solver for a very wide range of Mach numbers** by *Takashi Minoshima, Takahiro Miyoshi*

astro-ph/2108.05425: **Magnetohydrodynamic with Adaptively Embedded Particle-in-Cell model: MHD-AEPIC** by *Yinsi Shou et al.*

astro-ph/2108.06335: **Chaos in the vicinity of a singularity in the Three-Body Problem: The equilateral triangle experiment in the zero angular momentum limit** by *Hugo D. Parischewsky et al.*

astro-ph/2108.08515: **Resonant tidal responses in rotating fluid bodies: global modes hidden beneath localized wave beams** by *Yufeng Lin, Gordon I. Ogilvie*

astro-ph/2108.13528: **Jupiter and jovian (exo)-planets in Palatini f(R) gravity** by *Aneta Wojnar*