ExoPlanet News
An Electronic Newsletter

No. 138, 15 December 2020

Editors: H. L. Capelo, J. Venturini, L. Mishra, & D. Angerhausen
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Contents

1 Editorial

Welcome to Edition 138 of the ExoPlanet News!

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

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 12 January 2021.

Wishing you health and prosperity in the New Year,

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

2 Abstracts of refereed papers

A Newtonian model for the WASP-148 exoplanetary system enhanced with TESS and ground-based photometric observations

G. Maciejewski[1]*, M. Fernández*[2]*, A. Sota*[2]*, A. J. García Segura*[2]

[1] Institute of Astronomy, Nicolaus Copernicus University, ul. Grudziadzka 5, 87-100 Toruń, Poland
[2] Instituto de Astrofísica de Andalucía (IAA-CSIC), Glorieta de la Astronomía 3, 18008 Granada, Spain

Acta Astronomica, in press (arXiv:2012.02602)

The WASP-148 planetary system has a rare architecture with a transiting Saturn-mass planet on a tight orbit which is accompanied by a slightly more massive planet on a nearby outer orbit. Using new space-born photometry and ground-based follow-up transit observations and data available in literature, we performed modeling that accounts for gravitational interactions between both planets. Thanks to the new transit timing data for planet b, uncertainties of orbital periods and eccentricities for both planets were reduced relative to previously published values by a factor of 3–4. Variation in transit timing has an amplitude of about 20 minutes and can be easily followed-up with a 1-m class telescopes from the ground. An approximated transit ephemeris, which accounts for gravitational interactions with an accuracy up to 5 minutes, is provided. No signature of transits was found for planet c down to the Neptune-size regime. No other transiting companions were found down to a size of about 2.4 Earth radii for interior orbits. We notice, however, that the regime of terrestrial-size planets still remains unexplored in that system.

Contact: gmac@umk.pl

Moving Planets Around: An Introduction to N-Body Simulations Applied to Exoplanetary Systems

Javier Roa[1]*, Adrian S. Hamers*[2,3]*, Maxwell X. Cai*[4,5]*, Nathan W.C. Leigh*[6,7]

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[2] Max-Planck-Institut für Astrophysik, Karl-Schwarzschild-Str. 1, 85741 Garching, Germany
[3] Leiden Observatory, Leiden University, 2300 RA Leiden, The Netherlands
[4] Departamento de Astronomía, Facultad de Ciencias Físicas y Matemáticas, Universidad de Concepción, Concepción, Chile
[5] Department of Astrophysics, American Museum of Natural History, New York, NY 10024, USA

MIT Press, published

An introduction to the laws of celestial mechanics and a step-by-step guide to developing software for direct use in astrophysics research (Open Access).

This book offers both an introduction to the laws of celestial mechanics and a step-by-step guide to developing software for direct use in astrophysics research. Moving Planets Around closes the gap between the exhaustive exposition of theory in conventional textbooks and real-world applications. The text is written engagingly in dialogue form, presenting the research journey of the fictional Alice, Bob, and Professor Starmover. Moving Planets Around not only educates students on the laws of Newtonian gravity, it also provides all that they need to start writing their own software, from scratch, for simulating the dynamical evolution of planets and exoplanets, stars, or other heavenly bodies.

The first half of the book develops a fully functional N-body integrator, using state-of-the art integration techniques, explaining both the techniques and the reasons that they are useful. The second half of the book focuses on using an advanced integration scheme to conduct real research, leading students in an investigation of the long-term dynamical stability of extrasolar circumbinary planets. At the end of the journey, students will be ready to design, conduct, and publish peer-review quality research.

Download/Website: https://mitpress.mit.edu/books/moving-planets-around

Contact: javier.roa@jpl.nasa.gov

Improving the RSM map exoplanet detection algorithm. PSF forward modelling and optimal selection of PSF subtraction techniques

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[1] STAR Institute, Université de Liège, Allée du Six Août 19c, 4000 Liège, Belgium

Astronomy & Astrophysics, in press (arXiv:2012.05094)

High-contrast imaging (HCI) is one of the most challenging techniques for exoplanet detection. It relies on sophisticated data processing to reach high contrasts at small angular separations. Most data processing techniques of this type are based on the angular differential imaging (ADI) observing strategy to perform the reference PSF subtraction, and generally make use of signal-to-noise (S/N) maps to infer the existence of planetary signals via thresholding. An alternative method for generating the final detection map was recently proposed with the regime-switching model (RSM) map, which uses a regime-switching framework to generate a probability map based on cubes of residuals generated by different PSF subtraction techniques. In this paper, we present several improvements to the original RSM map, focusing on novel PSF subtraction techniques and their optimal combinations, as well as a new procedure for estimating the probabilities involved. We started by implementing two forward-model versions of the RSM map algorithm based on the LOCI and KLIP PSF subtraction techniques. We then addressed the question of optimally selecting the PSF subtraction techniques to optimise the overall performance of the RSM map. A new forward-backward approach was also implemented to take into account both past and future observations to compute the RSM map probabilities, leading to improved precision in terms of astrometry and lowering the background speckle noise. We tested the ability of these various improvements to increase the performance of the RSM map based on different data sets via a computation of ROC curves. These results demonstrate the benefits of these proposed improvements. Finally, we present a new framework to generate contrast curves based on probability maps. The contrast curves highlight the higher performance of the RSM map compared to a standard S/N map at small angular separations.

Download/Website: `http://arxiv.org/abs/2012.05094`

Contact: `carl-henrik.dahlqvist@uliege.be`

Hiding Signatures of Gravitational Instability in Protoplanetary Discs with Planets

S. Rowther[1,2], *F. Meru*[1,2], *G. M. Kennedy*[1,2], *R. Nealon*[3], *C. Pinte*[4]

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Astrophysical Journal Letters, Accepted (arXiv:2011.04683)

We carry out three dimensional SPH simulations to show that a migrating giant planet strongly suppresses the spiral structure in self-gravitating discs. We present mock ALMA continuum observations which show that in the absence of a planet, spiral arms due to gravitational instability are easily observed. Whereas in the presence of a giant planet, the spiral structures are suppressed by the migrating planet resulting in a largely axisymmetric disc with a ring and gap structure. Our modelling of the gas kinematics shows that the planet's presence could be inferred, for example, using optically thin $^{13}C^{16}O$. Our results show that it is not necessary to limit the gas mass of discs by assuming high dust-to-gas mass ratios in order to explain a lack of spiral features that would otherwise be expected in high mass discs.

Download/Website: `https://arxiv.org/abs/2011.04683`

Contact: `sahl.rowther@warwick.ac.uk`

First detection of orbital motion for HD 106906 b: A wide-separation exoplanet on a Planet Nine-like orbit

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[1] Department of Astronomy, University of California, Berkeley, CA 94720, USA
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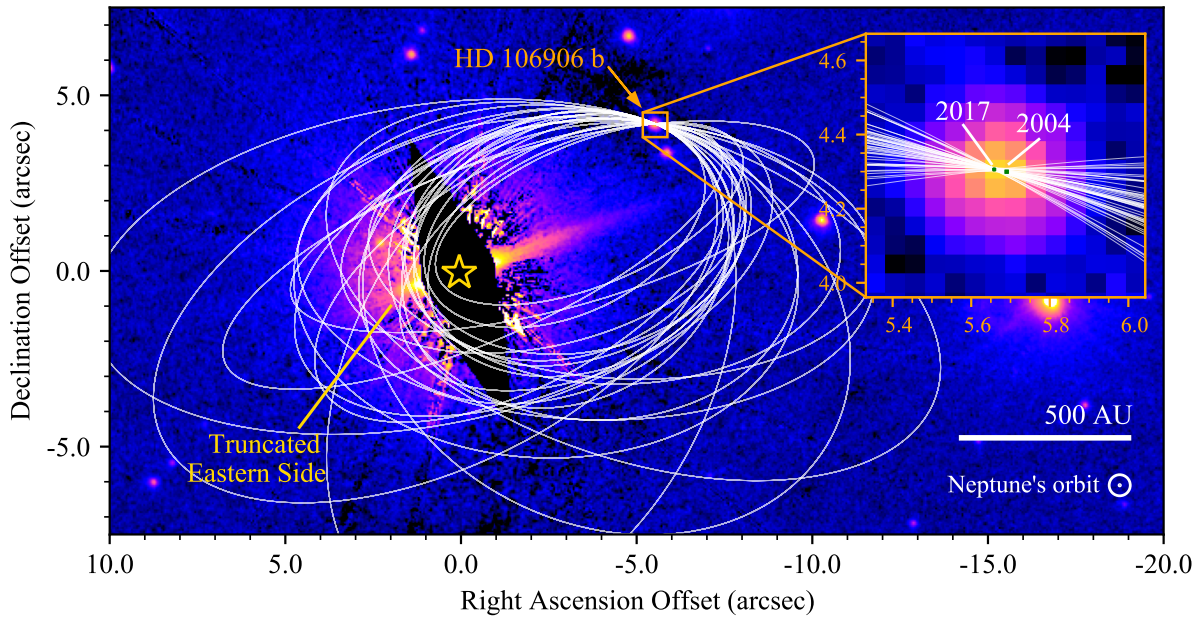
The Astronomical Journal, Published (ADS-Bibcode:2021AJ....161...22N)

HD 106906 is a 15 Myr old short-period (49 days) spectroscopic binary that hosts a wide-separation (737 au) planetary-mass ($\sim 11\ M_{\rm Jup}$) common proper motion companion, HD 106906 b. Additionally, a circumbinary debris disk is resolved at optical and near-infrared wavelengths that exhibits a significant asymmetry at wide separations that may be driven by gravitational perturbations from the planet. In this study we present the first detection of orbital motion of HD 106906 b using Hubble Space Telescope images spanning a 14 yr period. We achieve high astrometric precision by cross-registering the locations of background stars with the Gaia astrometric catalog, providing the subpixel location of HD 106906 that is either saturated or obscured by coronagraphic optical elements. We measure a statistically significant 31.8 ± 7.0 mas eastward motion of the planet between the two most constraining measurements taken in 2004 and 2017. This motion enables a measurement of the inclination between the orbit of the planet and the inner debris disk of either 36^{+27}_{-14} deg or 44^{+27}_{-14} deg, depending on the true orientation of the orbit of the planet. There is a strong negative correlation between periastron and mutual inclination; orbits with smaller periastra are more misaligned with the disk plane. With a periastron of 510^{+480}_{-320} au, HD 106906 b is likely detached from the planetary region within 100 au radius, showing that a Planet Nine–like architecture can be established very early in the evolution of a planetary system.

Download/Website: `https://arxiv.org/abs/2012.04712`

Contact: `meiji274@berkeley.edu`



LIStEN: L' band Imaging Survey for Exoplanets in the North

Arianna Musso Barcucci[1], *Ralf Launhardt*[1], *André Müller*[1], *Grant M. Kennedy*[2], *Roy van Boekel*[1], *Thomas Henning*[1], *Henrik L. Ruh*[3], *Sebastian Marino*[1], *Tim D. Pearce*[4], *Stefan S. Brems*[3], *Steve Ertel* [5,6], *Eckhart A. Spalding* [6,7]

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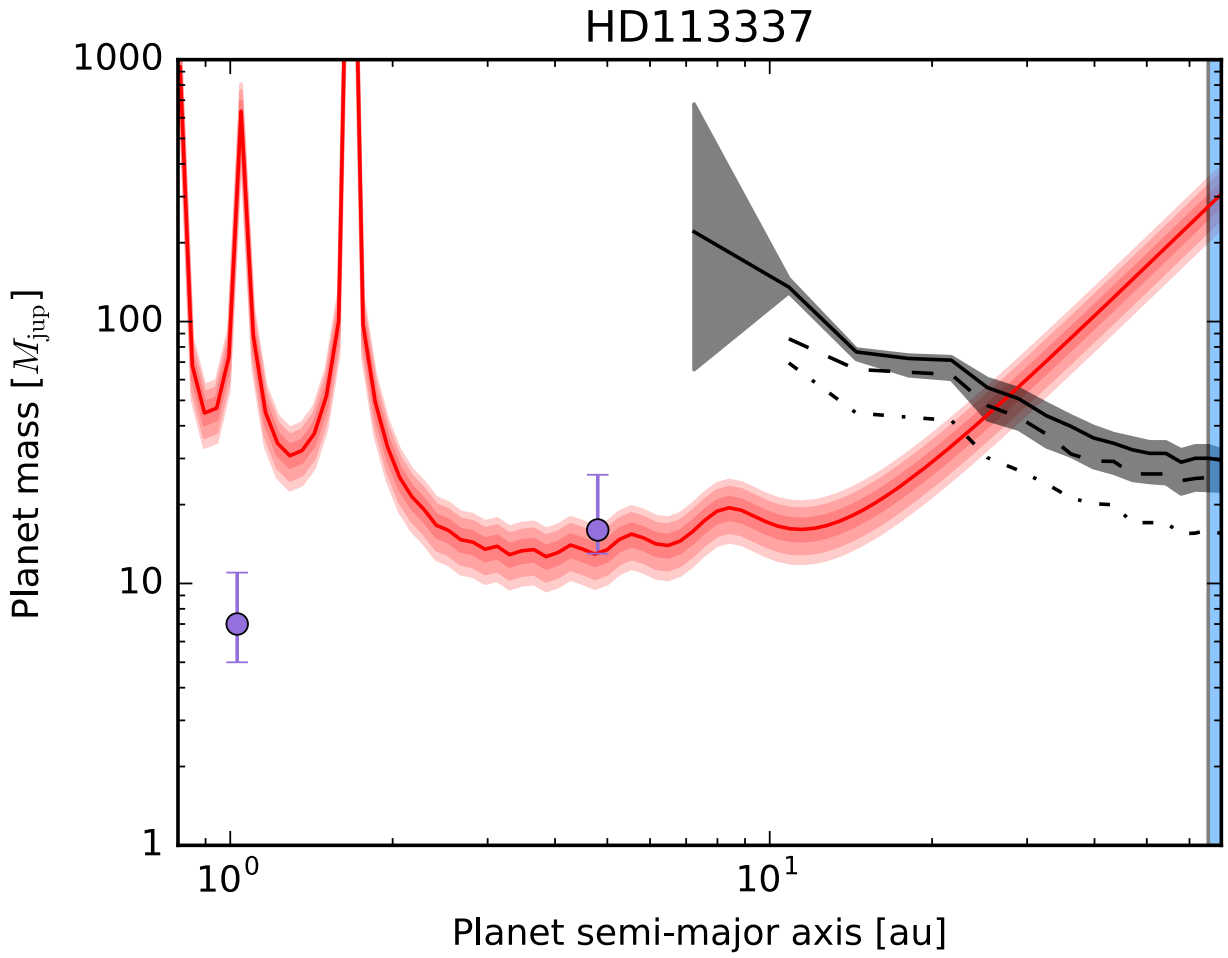
[5] Large Binocular Telescope Observatory, 933 North Cherry Avenue, Tucson, AZ 85721, USA
[6] Steward Observatory, Department of Astronomy, University of Arizona, 993 N. Cherry Avenue, Tucson, AZ, 85721, USA
[7] Department of Physics, University of Notre Dame, 225 Nieuwland Science Hall, Notre Dame, IN, 46556, USA

Astronomy & Astrophysics, in press

Planetary systems and debris discs are natural by-products of the star formation process, and they affect each other. The direct imaging technique allows simultaneous imaging of both a companion and the circumstellar disc it resides in, and is thus a valuable tool to study companion-disc interactions. However, the number of systems in which a companion and a disc have been detected at the same time remains low. Our aim is to increase this sample, and to continue detecting and studying the population of giant planets in wide orbits. We carry out the L' band Imaging Survey for Exoplanets in the North (LIStEN), which targeted 28 nearby stars: 24 are known to harbour a debris disc (DD) and the remaining 4 are protoplanetary disc-hosting stars. We aim to detect possible new companions, and study the interactions between the companion and their discs. Angular differential imaging (ADI) observations were carried out in the L' band at 3.8 μm using the LMIRCam instrument at the LBT, between October 2017 and April 2019. No new companions were detected. We combined the derived mass detection limits with information on the disc, and on the proper motion of the host star, to constrain the presence of unseen planetary and low-mass stellar companion around the 24 disc-hosting stars in our survey. We find that 2 have an uncertain DD status and the remaining 22 have disc sizes compatible with self-stirring. Three targets show a proper motion anomaly (PMa) compatible with the presence of an unseen companion. Our achieved mass limits combined with the PMa analysis for HD 113337 support the presence of a second companion around the star, as suggested in previous RV studies. Our mass limits also help to tighten the constraints on the mass and semi-major axis of the unseen companions around HD 161868 and HD 8907.

Contact: musso@mpia.de



Proper Motion anomaly analysis from Kervella et al., 2019, for HD 113337. The red line is the relation between companion's mass (in Jupiter masses) and orbital radius (in au) that can explain the observed PMa, and the red shaded areas (progressively darker) are the 1, 2 and 3σ uncertainties. The black solid line and black shaded area denote the achieved 5σ mass detection limits from the LIStEN observations with its uncertainty, together with the 3σ (dashed line) and 1σ (dotted line). The blue shaded area represents the resolved disc position and extent for HD 113337. The purple points and errorbars mark the position and mass of the two known RV planets orbiting the star. We point out that the mass and semi-major axis of the far-most companion (firstly detected via RV by Borgniet et al., 2019) would be compatible with the observed PMa, and we suggest that this finding serves as further confirmation of the RV signal.

The Age of the Carina Young Association and Potential Membership of HD 95086

M. Booth[1]*, C. del Burgo*[2,3]*, V. V. Hambaryan*[1,4]

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[2] Instituto Nacional de Astrofísica, Óptica y Electrónica, Luis Enrique Erro 1, Sta. Ma. Tonantzintla, Puebla, Mexico
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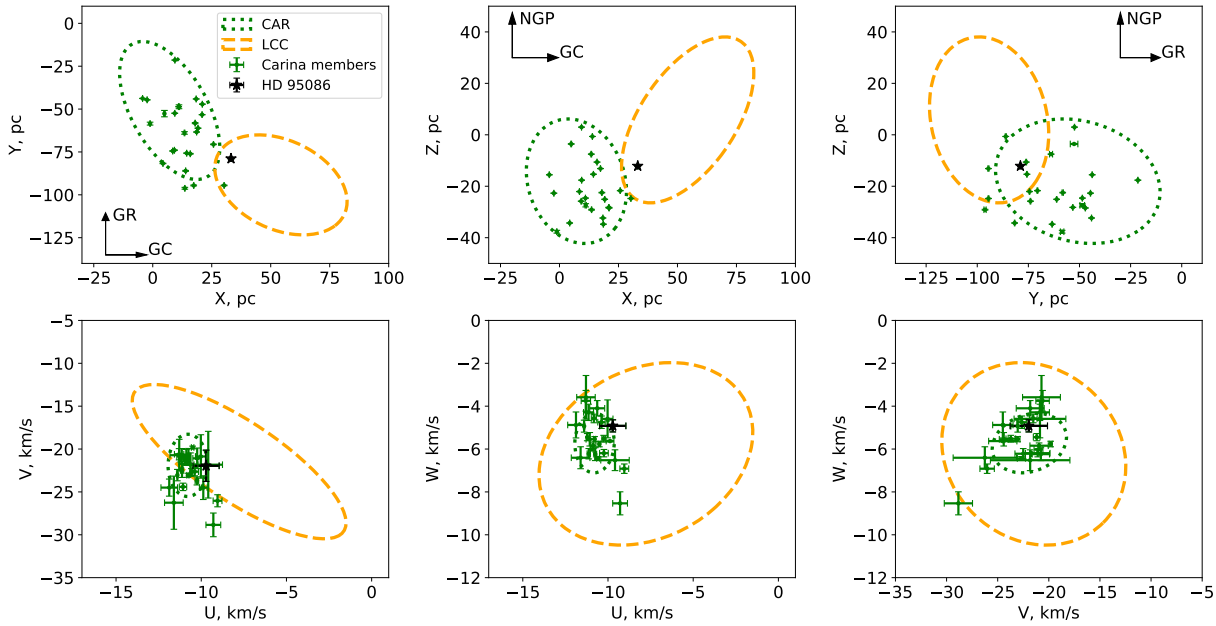
MNRAS, in press (2020MNRAS.tmp.3399B)

Carina is a nearby young stellar association. So far, only a small number of stars have been clearly identified as members of this association. In this paper we reanalyse the membership of the association in light of *Gaia* DR2 data, in particular finding that HD 95086 is a potential member (probability of 71%). This star is noteworthy as one of the few stars that hosts both a detected debris disc and a directly imaged planet. It has previously only been considered as a potential member of the Lower Centaurus Crux (LCC) – part of the Scorpius-Centaurus association. We also reanalyse the age of the Carina association. Using a Bayesian inference code applied to infer a solution from stellar evolution models for the most probable (¿99%) members of Carina, we infer an age for the association of $13.3^{+1.1}_{-0.6}$ Myr, much younger than previous studies. Whilst we have revised HD 95086's association membership from LCC to Carina, the fact that we also find Carina to have a younger age, similar to that of LCC, means that the estimates of HD 95086b's mass remain unchanged. However, the younger age of Carina does mean that the companion to another Carina member, HD 44627 (AB Pic), has a mass that is more clearly in the planet rather than brown dwarf range.

Download/Website: `https://doi.org/10.1093/mnras/staa3631`

Contact: `mark.booth@uni-jena.de`



Plot of the position and velocity in Cartesian coordinates of the Carina (orange dotted ellipse) and LCC (green dashed ellipse) associations as well as HD 95086 (black point) and the rest of the potential Carina members (green points). The ellipses represent the FWHM of the six-dimensional Gaussian models for the associations used by BANYAN Σ. The arrows point in the directions of the Galactic centre (GC), Galactic rotation (GR) and North Galactic Pole (NGP). HD 95086 is seen to lie within the FWHM of the LCC model for all coordinates, but its proximity to the centre of the Carina model, particularly in terms of velocities, increases the likelihood that it is a Carina member.

3 Jobs and Positions

Postdoctoral positions in analysing JWST GTO observations of exoplanets, brown dwarfs, and protostars

Thomas Greene
NASA Ames Research Center

Mountain View, California, USA, ∼August 2021

Two postdoctoral positions are available in analyzing and characterizing exoplanet, brown dwarf, and protostellar atmospheres with James Webb Space Telescope (JWST) spectroscopic and photometric data. The positions will be in the Space Science and Astrobiology Division of NASA Ames Research Center, located near Mountain View, California, USA. One position will be focused on data analysis and characterization of the atmospheres of transiting planets, with an emphasis on analyzing time-series observations acquired with the JWST MIRI instrument. The other position will be focused on analyzing the spectra of both protostars and nearby brown dwarfs. The data will be obtained via guaranteed-time observations (GTO) and possibly general observer (GO) observations that are scheduled to start in the first half of 2022.

NASA Ames is in the heart of the San Francisco Bay Area and provides an exciting, interdisciplinary research environment. A number of Ames scientists work on a wide variety of exoplanet, brown dwarf, and protostar topics including radiative transfer, emergent spectra modeling, calculation of opacities, chemical processes, system dynamics, and JWST instrumentation. We also host and chair quarterly Bay Area Exoplanets Meetings to discuss recent advances with colleagues at UC Santa Cruz, Stanford, UC Berkeley, the SETI Institute, San Francisco State, and other institutions.

We expect the positions to commence in the summer of 2021, several months before the JWST launch in October. There will be opportunities for independent research, and funding is available for research travel. Each position will be funded for two to three years.

Applications are open now, and they will close by January 31, 2021. More information on both positions and application instructions are provided at the website link below.

Download/Website: `https://jobregister.aas.org/ad/668ee3f9`

Contact: `tom.greene@nasa.gov`

Postdoctoral Researcher(f/m/d) in Laser Optics and Frequency Standards

Ansgar Reiners
Institute for Astrophysics Göttingen, Georg-August University, Göttingen, D

Göttingen, early Summer 2021

The Institute for Astrophysics Göttingen at the Georg-August-Universität Göttingen is looking to fill the position of a

Postdoctoral Researcher(f/m/d) in Laser Optics and Frequency Standards

for applications in astronomical high precision spectroscopy. We are searching for an experimental physicist with experience in spectroscopy, semiconductor diode lasers and frequency locking techniques. Candidates should have a PhD in physics. Regular working hours will be 39.8 hours per week with a limited contract of 2 years (Pay grade 14 TV-L). IAG is leading the calibration unit development for ELT-HIRES. The successful applicant will join the HIRES team as managing calibration scientist at IAG.

The Institute for Astrophysics at the Georg-August University Göttingen offers a young and dynamic work environment with access to high-precision spectrographs and telescopes in our institute and at international observatories. Research at the IAG combines theoretical and observational work in stellar astrophysics, extra-solar planets, astro- and helioseismology, solar physics, instrument development as well as other fields. It is participating in the development of ESO VLT and E-ELT facilities and of the exoplanet survey CARMENES at Calar Alto Observatory. The IAG hosts the Research Unit 2544 *Blue Planets around Red Stars*. Göttingen is a historic university city with a vibrant student population situated close to the Harz mountains in central Germany.

The University of Göttingen is an equal opportunities employer and places particular emphasis on fostering career opportunities for women. Qualified women are therefore strongly encouraged to apply in fields in which they are underrepresented. The university has committed itself to being a family-friendly institution and supports their employees in balancing work and family life.The mission of the University is to employ a greater number of severely disabled persons. Applications from severely disabled persons with equivalent qualifications will be given preference.

Please send your application with the usual documents (also in electronic form) by Dec 31, 2020 to Georg-August-Universität Göttingen, Fakultät f. Physik, Friedrich-Hund-Platz 1, 37077 Göttingen, e-mail: `sekr@astro.physik.uni-goettingen.de`.

If you have any questions, please contact Prof. Ansgar Reiners

Download/Website: `https://www.uni-goettingen.de/en/305402.html?cid=15298`
Contact: `sekr@astro.physik.uni-goettingen.de`

three PhD students (f/m/d)

Lisa Nortmann, Ansgar Reiners, Stefan Dreizler
Institute for Astrophysics Göttingen, Georg-August University, Göttingen, D

Göttingen, early Summer 2021

The Institute for Astrophysics Göttingen (IAG) at the Georg-August-Universität Göttingen is invites applications for the position of

three PhD students (f/m/d)

in the fields of transit photometry, exoplanet atmospheres, and radial velocities. Regular working hours will be 23.88 hours per week (remuneration is 60% of 39.8 hours, pay grade 13 TV-L with a temporary contract of initially 3 years). Our projects are part of the Research Unit 2544 *Blue Planets around Red Stars* and the DFG Priority Programme 1992 *Exploring the Diversity of Extrasolar Planets*.

The starting dates are negotiable but are expected to be around summer 2021. PhD student candidates will have a Master's degree.

The Institute for Astrophysics at the Georg-August University Göttingen offers a young and dynamic work environment with access to high-precision spectrographs and telescopes in our institute and at international observatories such as the ESO-VLT, the Calar Alto observatory, and the Hobby Eberly Telescope (HET). Research at the IAG combines theoretical and observational work in stellar astrophysics, extra-solar planets, astro- and helioseismology, solar physics, instrument development as well as other fields.

In particular, the institute is involved in the CARMENES exoplanet survey and the new infrared high-resolution spectrograph CRIRES+ at the ESO/VLT as well as the The Habitable Zone Planet Finder at the HET. The prospective PhD students will have the opportunity to work with data from these facilities. IAG hosts the DFG-funded Research Unit 2544 *Blue Planets around Red Stars*. Göttingen is a historic university city with a vibrant student population situated close to the Harz mountains in central Germany.

The University of Göttingen is an equal opportunities employer and places particular emphasis on fostering career opportunities for women. Qualified women are therefore strongly encouraged to apply. The university has committed itself to being a family-friendly institution and supports their employees in balancing work and family life. Disabled persons with equivalent aptitude will be given preference.

Please send your application with the usual documents in electronic form by 31.12.2020 to e-mail:`sekr@astro.physik.uni-goettingen.de`. You are welcome to contact Lisa Nortmann, Ansgar Reiners, and Stefan Dreizler for any questions you may have about the application or positions.

Download/Website: `https://www.uni-goettingen.de/en/305402.html?cid=15287`
Contact: `sekr@astro.physik.uni-goettingen.de`

Postdoc in stellar-planet chemical connection

Dr. Paula Jofré

Astronomy Nucleus, Diego Portales University, Chile., Application Deadline: Sunday, January 10, 2021

The Astronomy Nucleus at Diego Portales University (UDP) invites applications for a 2-year postdoctoral position related to stellar-planet chemical connection. The postdoc will work on an interdisciplinary project funded by the Joint ESO-Chile Committee led by Dr. Paula Jofré from UDP, in collaboration with Dr. Julio Chanamé from Pontificia Universidad Católica de Chile (PUC) and Dr. Amy Bonsor from the Institute of Astronomy at the University of Cambridge, UK.

We live in an epoch of exoplanet discovery. The composition of exoplanets is strongly linked to their host stars. The postdoctoral position is to work on problems related to low-mass stars, white dwarfs, and the chemical composition of exoplanetary systems and their host stars. We are, therefore, seeking candidates with a PhD in astrophysics and a strong background in either stellar spectroscopy of cool stars or white dwarfs. Candidates should show an interest in understanding the links between stellar and planetary abundances, mining Gaia data to find good targets and in proposing and performing their own astronomical observations.

The Astronomy group at UDP is among the most productive groups in Chile with a recently started Ph.D. program, and hosts an international scientifically vibrant environment; with students, postdocs, and young faculty members. Similarly, PUC, located a few metro stations away from UDP, hosts a large, dynamic, and well established scientific environment, with a particularly strong international postdoctoral community.

While at UDP, successful candidate will qualify as member of the Chilean community and will be eligible for the 10% privileged access to all telescopes in Chile, including ALMA, VLT, Gemini South, Magellan, CTIO, SOAR, La Silla, APEX, and ASTE, as well as to survey facilities such as SDSS-V.

Applications should be submitted by e-mail as a single pdf format to paula.jofre@mail.udp.cl by 10th January 2021 to ensure full consideration. They should include a brief cover letter (1-page), research statement (max. 3 pages; including current and previous research how their skills are suitable for this position), and a CV (with a publication list). In addition, applicants should provide the names and contact information of 3 references willing to provide letters of recommendation upon request.

Fellowship offers support for one yearly travel to the University of Cambridge to visit Dr. Amy Bonsor, UK counterpart of the project. We particularly encourage applicants for minority groups.

Download/Website: `https://jobregister.aas.org/ad/065fe39d`

Contact: `paula.jofre@mail.udp.cl`

4 Exoplanet Archive Updates

November 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, December 15, 2020

Note: Unless otherwise noted, all planetary and stellar data mentioned in the news are in the Planetary Systems Table (beta) (`http://bit.ly/2Pt0tM1`), which provides a single location for all self-consistent planetary solutions, and its companion table the Planetary Systems Composite Parameters (alpha) (`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 Data Table (`http://bit.ly/2JQr180`) or Direct Imaging Table (`http://bit.ly/3ayD185`).

November 19, 2020
Five More Planets, and a *Friendly* Reminder About Retiring Tables

There are five more planets in the archive this week, bringing the total confirmed exoplanet count to **4306**. The new planets are EPIC 201170410.02 (K2-327 b), EPIC 201757695.02 (K2-328 b), KOI-547.03 (Kepler-595 c), 0 TOI-954 b, and EPIC 246193072 b (K2-329 b).

You can view all of the new data in our Planetary Systems Table (beta) or its companion table, Planetary Systems Composite Parameters (alpha), which offers a more complete table of planet parameters combined from multiple references and calculations. The Confirmed Planets, Composite Planet Data, and Extended Planet Data interactive tables are also updated with new planetary and stellar data.

Please note: We're still planning to retire the Confirmed Planets, Composite Planets, and Extended Planet Data tables in late January 2021. The new Planetary Systems and Planetary Systems Composite tables will replace them. An incremental, functional update on the PS and PSComp tables is planned for December, and we expect another update prior to the retirement of the older tables. This transition document (`https://bit.ly/3jLgrhl`) is intended to help the community understand how the new tables map to the old tables and how the API queries can be changed to access the new PS and PSComp tables.

November 5, 2020
Five New Planets!: This week's planets include four discovered with gravitational microlensing, and one transiting planet discovered with Kepler data. The new planets are KMT-2016-BLG-2364L b, KMT-2016-BLG-2397L b, OGLE-2017-BLG-0604L b, OGLE-2017-BLG-1375L b, and Kepler-462 c.

New Transmission Spectra: We've also added new spectra to the Transmission Spectroscopy Table (`http://bit.ly/2B54JfR`) for KELT-11 b, WASP-103 b, WASP-21 b, WASP-117 b, and WASP-69 b.

Download/Website: `https://exoplanetarchive.ipac.caltech.edu`

Contact: `mharbut@caltech.edu`

5 Announcements

Exocoffee at MPIA

E. Nasedkin, P. Mollière
Max-Planck-Institut für Astronomie, Königsthul 17, Heidelberg 69117, Germany

MPIA, December 15, 2020

Here at MPIA, we've been running a weekly, online 'Exocoffee' literature meeting where we invite speakers to give short, informal presentations of their recent work and launch a discussion around it.
We are now excited to open the meeting up, and invite anyone in the exoplanet community - or related fields - to tune into our talk at 2PM CET on Tuesdays. A list of upcoming presenters is available on the website, and the Zoom link can be accessed by subscribing to the mailing list.
Please get in touch if you are interested in discussing your latest work! We are more than willing to adjust the timing of the meeting to reach everyone who is located outside of Europe.

Download/Website: `https://sites.google.com/view/exocoffee`
Mailer: `https://mailer.mpia-hd.mpg.de/mailman/listinfo/exocoffee`
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Exoplanet modelling in the James Webb Era

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Online Meeting, 08/01/2021

We invite participants to a Royal Astronomical Society Specialist Discussion Meeting on exoplanet modelling approaches in the era of JWST. The meeting will run from 10:30-15:35 GMT and will feature a mixture of invited and contributed talks, covering topics such as: the modelling and removal of stellar activity signals in transit spectroscopy; assumptions about atmospheric homogeneity, and the treatment of cloud and haze, in atmosphere models; and the assumption of a solar abundance, chemical equilibrium atmosphere for gas giant planets. Contributed talk abstracts can be submitted for consideration at https://forms.gle/3TkANaCLM7kVASUE7 until the 18th December. To register for the meeting, and for more information, please use the link to the main meeting page below.

Download/Website: `https://tinyurl.com/ras-sdm-jwst-exo`
Contact: `jo.barstow@open.ac.uk`

Astronet Science Vision and Infrastructure Roadmap for European Astronomy

Kamalam Vanninathan
Astronet, Secretary of Astronet Board.

Astronet is working on the next Science Vision and Infrastructure Roadmap. The first drafts from the different working panels will be available from January 2021 on the Astronet website. At the time of publishing, we will endeavour to notify all communities via relevant mailing lists in individual countries and consortiums. Comments, feedback or questions from the Exoplanet community are valuable and helpful in finalising this report. We are also looking to hold a town hall type event in the early part of 2021 to update the community and address any issues which have been raised.

The Science Vision and Infrastructure Roadmap revolves around the research themes listed below:

- Origin and evolution of the Universe
- Formation and evolution of Galaxies
- Formation and evolution of Stars
- Formation and evolution of Planetary Systems
- Understanding the Solar System and conditions for Life

and cross-cutting themes

- Societal aspects – education, public engagement climate action, equality, diversity and inclusion
- Computing – big data, high performance computing, data infrastructure

Astronet is a consortium of European funding agencies, established for the purpose of providing advice on long-term planning and development of European Astronomy. Setup in 2005, its members include most of the major European astronomy nations, with associated links to the European Space Agency, the European Southern Observatory and the European Astronomical Society, among others. The purpose of the Science Vision and Infrastructure Roadmap is to deliver a coordinated vision covering the entire breadth of astronomical research, from the origin and early development of the Universe to our own Solar System.

The first European Science Vision and Infrastructure Roadmap for Astronomy was created by Astronet, using EU funds, in 2007/08, and updated in 2013/14. Astronet is now producing a single document encompassing both the science vision and infrastructure roadmap with an outlook for the next 20 years. A delivery date to European funding agencies of early 2021 is anticipated.
Please see the Astronet website for further information.

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6 As seen on astro-ph

List of exoplanet related entries seen on astro-ph during November 2020.

astro-ph/2011.00003: **Identifying Exoplanets with Deep Learning. IV. Removing Stellar Activity Signals from Radial Velocity Measurements Using Neural Networks** by *Zoe L. de Beurs et al.*
astro-ph/2011.00018: **Separating planetary reflex Doppler shifts from stellar variability in the wavelength domain** by *A. Collier Cameron et al.*
astro-ph/2011.00022: **The Three Dimensional Flow Field Around Planets on Eccentric Orbits** by *Avery Bailey, Jim Stone, Jeffrey Fung*
astro-ph/2011.00044: **Early High-contrast Imaging Results with Keck/NIRC2-PWFS: The SR 21 Disk** by *Taichi Uyama et al.*
astro-ph/2011.00466: **Revised instellation patterns for close-in exoplanets** by *Mradumay Sadh*
astro-ph/2011.00602: **A new perspective on interiors of ice-rich planets: Ice-rock mixture rather than a layered structure** by *Allona Vazan, Re'em Sari, Roni Kessel*
astro-ph/2011.01064: **Loss and fractionation of noble gas isotopes and moderately volatile elements from planetary embryos and early Venus, Earth and Mars** by *H. Lammer et al.*
astro-ph/2011.01236: **Hot Jupiter and ultra-cold Saturn formation in dense star clusters** by *Yi-Han Wang et al.*
astro-ph/2011.01245: **Atmospheric Rossiter-McLaughlin effect and transmission spectroscopy of WASP-121b with ESPRESSO** by *F. Borsa et al.*
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astro-ph/2011.01716: **The CARMENES search for exoplanets around M dwarfs – LP 714-47b (TOI 442.01): Populating the Neptune desert** by *S. Dreizler et al.*
astro-ph/2011.02030: **PyLightcurve-torch: a transit modelling package for deep learning applications in PyTorch** by *Mario Morvan et al.*
astro-ph/2011.02069: **SPECULOOS – Ultracool Dwarf Transit Survey: Target List and Strategy** by *D. Sebastian et al.*
astro-ph/2011.02305: **ALMA chemical survey of disk-outflow sources in Taurus (ALMA-DOT). IV. Thioformaldehyde (H2CS) in protoplanetary disks: spatial distributions and binding energies** by *C. Codella et al.*
astro-ph/2011.02536: **The impact of pre-main sequence stellar evolution on midplane snowline locations and C/O in planet forming discs** by *James M. Miley et al.*
astro-ph/2011.02869: **Accretion of Gas Giants Constrained by the Tidal Barrier** by *Ya-Ping Li et al.*
astro-ph/2011.03053: **Predicting missing planets in multiplanet system populations via analytical assessments of dynamical packing** by *Ana Luisa Tio Humphrey (1), Elisa V. Quintana (2) ((1) Center for Astrophysics — Harvard & Smithsonian, (2) NASA Goddard Space Flight Center)*
astro-ph/2011.03221: **ARES IV: Probing the atmospheres of the two warm small planets HD 106315 c and HD 3167 c with the HST/WFC3 camera** by *Gloria Guilluy et al.*
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