ExoPlanet News
An Electronic Newsletter

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Editors: S. P. Quanz,Y. Alibert, A. Leleu, C. Mordasini
NCCR PlanetS, Gesellschaftsstrasse 6, CH-3012 Bern, Switzerland

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

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1 Editorial

Welcome to edition 104 of the ExoPlanet News!

A big thanks to all of you who submitted abstracts and other contributions to this edition of the Exoplanet Newsletter! We are very happy to have a rather long section related to conferences and workshops this time (5 events in total!). Please, those of you who are organizing a meeting, keep sending us abstracts; since the newsletter has more than 1500 recipients you are reaching a lot of colleagues with little effort!
At the same time, please do not forget to send us abstracts of recently accepted papers and remind your collaborators to do the same. Comparing the long list of astro-ph entries related to exoplanet science each month to the number of submitted abstracts one can see that the majority of papers is not yet actively advertized in the newsletter. It would be great if slowly but surely we start tapping into this potential and add (even) more value to the newsletter. The correct templates for submitting a contribution, as well as all previous editions of ExoPlanet News, can be found at http://nccr-planets.ch/exoplanetnews/.

All abstracts, but also suggestions and feedback, should be sent to exoplanetnews@nccr-planets.ch.
The next issue of the newsletter will appear in mid March 2018.

Thanks for all your support and best regards from Switzerland

Sascha P. Quanz
Yann Alibert
Adrien Leleu
Christoph Mordasini

2 Abstracts of refereed papers

On the diversity and statistical properties of protostellar discs

Matthew R. Bate[1]
[1] School of Physics and Astronomy, University of Exeter, Stocker Road, Exeter EX4 4QL , United Kingdom

MNRAS, in press (http://arxiv.org/abs/1801.07721)

We present results from the first population synthesis study of protostellar discs. We analyse the evolution and properties of a large sample of protostellar discs formed in a radiation hydrodynamical simulation of star cluster formation. Due to the chaotic nature of the star formation process, we find an enormous diversity of young protostellar discs, including misaligned discs, and discs whose orientations vary with time. Star-disc interactions truncate discs and produce multiple systems. Discs may be destroyed in dynamical encounters and/or through ram-pressure stripping, but reform by later gas accretion. We quantify the distributions of disc mass and radii for protostellar ages up to $\approx 10^5$ yrs. For low-mass protostars, disc masses tend to increase with both age and protostellar mass. Disc radii range from of order ten to a few hundred au, grow in size on timescales $\leq 10^4$ yr, and are smaller around lower-mass protostars. The radial surface density profiles of isolated protostellar discs are flatter than the minimum mass solar nebula model, typically scaling as $\Sigma \propto r^{-1}$. Disc to protostar mass ratios rarely exceed two, with a typical range of $M_{\rm d}/M_* = 0.1 - 1$ to ages $\leq 10^4$ yrs and decreasing thereafter. We quantify the relative orientation angles of circumstellar discs and the orbit of bound pairs of protostars, finding a preference for alignment that strengths with decreasing separation. We also investigate how the orientations of the outer parts of discs differ from the protostellar and inner disc spins for isolated protostars and pairs.

Download/Website: `http://www.astro.ex.ac.uk/people/mbate/Animations/`

Contact: `mbate@astro.ex.ac.uk`

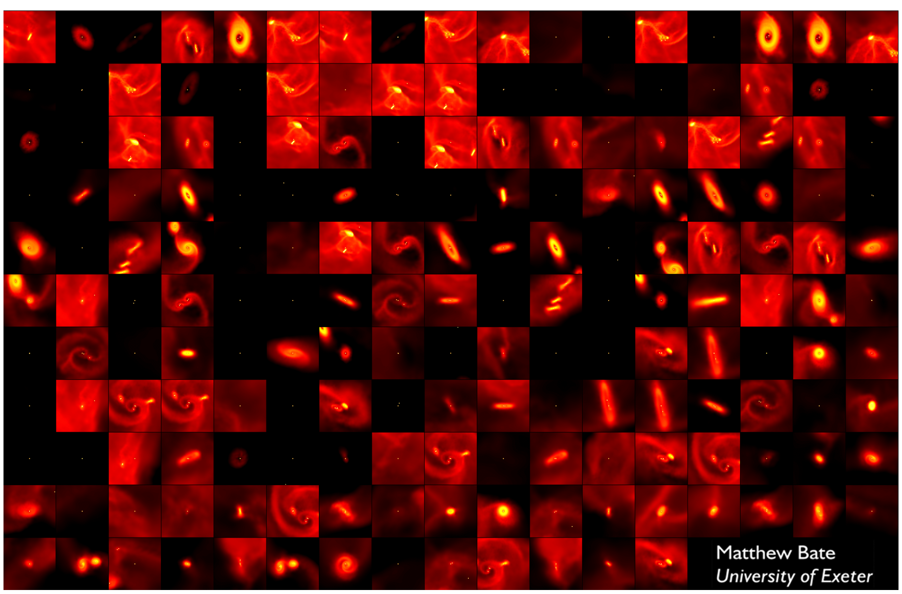

Figure 1: Bate: The discs of each the 183 protostars at the end of the animation that accompanies the paper. Each sub-panel shows a region measuring 400 × 400 AU, centred on one of the protostars.

Dust evolution in protoplanetary discs and the formation of planetesimals. What have we learned from laboratory experiments?

J. Blum[1]

[1] Institut für Geophysik und extraterrestrische Physik, Technische Universität Braunschweig, Mendelssohnstr. 3, D-38106 Braunschweig, Germany

Space Science Reviews, accepted (arXiv:1802.00221)

After 25 years of laboratory research on protoplanetary dust agglomeration, a consistent picture of the various processes that involve colliding dust aggregates has emerged. Besides sticking, bouncing and fragmentation, other effects, like, e.g., erosion or mass transfer, have now been extensively studied. Coagulation simulations consistently show that μm-sized dust grains can grow to mm- to cm-sized aggregates before they encounter the bouncing barrier, whereas sub-μm-sized water-ice particles can directly grow to planetesimal sizes. For siliceous materials, other processes have to be responsible for turning the dust aggregates into planetesimals. In this article, these processes are discussed, the physical properties of the emerging dusty or icy planetesimals are presented and compared to empirical evidence from within and without the Solar System. In conclusion, the formation of planetesimals by a gravitational collapse of dust "pebbles" seems the most likely.

Contact: `j.blum@tu-bs.de`

Sulphur monoxide exposes a potential molecular disk wind from the planet-hosting disk around HD 100546

A. S. Booth [1], *C. Walsh* [1], *M. Kama* [2], *R. A. Loomis* [3], *L. T. Maud* [4] *& A. Juhász* [3]

[1] School of Physics and Astronomy, University of Leeds, Leeds LS2 9JT, UK
[2] Institute of Astronomy, Madingley Rd, Cambridge, CB3 0HA, UK
[3] Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, USA
[4] Leiden Observatory, Leiden University, PO Box 9513, 2300 RA Leiden, The Netherlands

Astronomy & Astrophysics, in press (arXiv:1712.05992)

Sulphur-bearing volatiles are observed to be significantly depleted in interstellar and circumstellar regions. This missing sulphur is postulated to be mostly locked up in refractory form. With ALMA we have detected sulphur monoxide (SO), a known shock tracer, in the HD 100546 protoplanetary disk. Two rotational transitions: $J = 7_7 - 6_6$ (301.286 GHz) and $J = 7_8 - 6_7$ (304.078 GHz) are detected in their respective integrated intensity maps. The stacking of these transitions results in a clear 5σ detection in the stacked line profile. The emission is compact but is spectrally resolved and the line profile has two components. One component peaks at the source velocity and the other is blue-shifted by 5 km s^{-1}. The kinematics and spatial distribution of the SO emission are not consistent with that expected from a purely Keplerian disk. We detect additional blue-shifted emission that we attribute to a disk wind. The disk component was simulated using LIME and a physical disk structure. The disk emission is asymmetric and best fit by a wedge of emission in the north east region of the disk coincident with a 'hot-spot' observed in the CO $J = 3 - 2$ line. The favoured hypothesis is that a possible inner disk warp (seen in CO emission) directly exposes the north-east side of the disk to heating by the central star, creating locally the conditions to launch a disk wind. Chemical models of a disk wind will help to elucidate why the wind is particularly highlighted in SO emission and whether a refractory source of sulphur is needed. An alternative explanation is that the SO is tracing an accretion shock from a circumplanetary disk associated with the proposed protoplanet embedded in the disk at 50 au. We also report a non-detection of SO in the protoplanetary disk around HD 97048.

Download/Website: `https://arxiv.org/abs/1712.05992`

Contact: `pyasb@leeds.ac.uk`

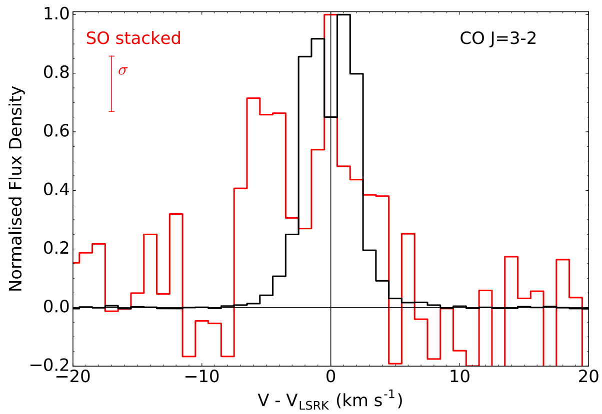

Figure 2: Booth et al.: SO stacked line profile (red) and CO $J = 3 - 2$ line profile (black) extracted from within the 3σ extent of their respective stacked integrated intensity maps. The SO stacked line profile reaches a S/N of 5 and the CO $J = 3 - 2$ reaches a S/N of 375. Note that the r.m.s. for the CO $J = 3 - 2$ is not visible on this scale (81 mJy)

The Stagger-grid: A grid of 3D stellar atmosphere models. V. Synthetic stellar spectra and broad-band photometry

A. Chiavassa [1], *L. Casagrande*[2], *R. Collet*[3], *Z. Magic*[4,5], *L. Bigot*[1], *F. Thévenin* [1], *M. Asplund*[2]

[1] Université Côte d'Azur, Observatoire de la Côte d'Azur, CNRS, Lagrange, CS 34229, Nice, France
[2] Research School of Astronomy & Astrophysics, Australian National University, Cotter Road, Weston ACT 2611, Australia
[3] Stellar Astrophysics Centre, Department of Physics and Astronomy, Ny Munkegade 120, Aarhus University, DK-8000 Aarhus C, Denmark
[4] Niels Bohr Institute, University of Copenhagen, Juliane Maries Vej 30, DK–2100 Copenhagen, Denmark
[5] Centre for Star and Planet Formation, Natural History Museum of Denmark, University of Copenhagen, Øster Voldgade 5-7, DK–1350 Copenhagen, Denmark

Astronomy & Astrophysics, in press (arXiv:1801.01895)

The surface structures and dynamics of cool stars are characterised by the presence of convective motions and turbulent flows which shape the emergent spectrum.
We used realistic three-dimensional (3D) radiative hydrodynamical simulations from the Stagger-grid to calculate synthetic spectra with the radiative transfer code Optim3D for stars with different stellar parameters to predict photometric colours and convective velocity shifts.
We calculated spectra from 1000 to 200 000 Å with a constant resolving power of $\lambda/\Delta\lambda$ =20 000 and from 8470 and 8710 Å (Gaia Radial Velocity Spectrometer - RVS - spectral range) with a constant resolving power of $\lambda/\Delta\lambda$ =300 000.
We used synthetic spectra to compute theoretical colours in the Johnson-Cousins $UBV(RI)_C$, SDSS, 2MASS, Gaia, SkyMapper, Strömgren systems, and HST-WFC3. Our synthetic magnitudes are compared with those obtained using 1D hydrostatic models. We showed that 1D versus 3D differences are limited to a small percent except for the narrow filters that span the optical and UV region of the spectrum. In addition, we derived the effect of the convective velocity fields on selected Fe I lines. We found the overall convective shift for 3D simulations with respect to the reference 1D hydrostatic models, revealing line shifts of between -0.235 and +0.361 km/s. We showed a net correlation of the convective shifts with the effective temperature: lower effective temperatures denote redshifts and higher effective temperatures denote blueshifts. We conclude that the extraction of accurate radial velocities from RVS spectra need an appropriate wavelength correction from convection shifts.
The use of realistic 3D hydrodynamical stellar atmosphere simulations has a small but significant impact on the predicted photometry compared with classical 1D hydrostatic models for late-type stars. We make all the spectra publicly available for the community through the POLLUX database.

Download/Website: `http://adsabs.harvard.edu/abs/2018arXiv180101895C`

Contact: `andrea.chiavassa@oca.eu`

Detection of a Westward Hotspot Offset in the Atmosphere of a Hot Gas Giant CoRoT-2b

L. Dang [1,2,3], *N. B. Cowan* [1,2,3,4], *J. C. Schwartz* [1,2,3,4], *E. Rauscher* [5], *M. Zhang* [6], *H. A. Knutson* [7], *M. Line* [8], *I. Dobbs-Dixon* [9], *D. Deming* [10], *S. Sundararajan* [11], *J. J. Fortney* [12], *M. Zhao* [13]

[1] Department of Physics, McGill University, 3600 University St, Montréal, QC H3A 2T8, Canada
[2] McGill Space Institute (MSI), McGill University, 3550 rue University, Montréal, QC H3A 2A7, Canada
[3] Institut de Recherche sur les Exoplanètes (iREx), C.P. 6128 Succ. Centre-ville, Montréal, QC H3C 3J7, Canada
[4] Department of Earth and Planetary Sciences, McGill University, 3450 rue University, Montréal, QC H3A 2A7, Canada
[5] Department of Astronomy, University of Michigan, 311 West Hall, 1085 South University, Ann Arbor, MI 48109, USA
[6] Division of Physics, Mathematics & Astronomy, Caltech, 1200 E California Blvd MC 249-17, Pasadena, CA 91125 USA
[7] Division of Geological & Planetary Sciences, Caltech, 1200 E California Blvd MC 150-21, Pasadena, CA 91125 USA
[8] School of Earth and Space Exploration, Arizona State University, 781 South Terrace Road, Tempe, AZ 85281, USA
[9] New York University Abu Dhabi, PO Box 129188, Abu Dhabi, UAE
[10] Department of Astronomy, University of Maryland, College Park, MD 20742-2421 USA
[11] Department of Computer Science and Engineering, Amrita University, India
[12] Department of Astronomy and Astrophysics, University of California, Santa Cruz, CA 95064, USA
[13] Astronomy & Astrophysics, Pennsylvania State University, University Park, PA 16802, USA

Nature Astronomy, (doi:10.1038/s41550-017-0351-6)

Short-period planets exhibit day-night temperature contrasts of hundreds to thousands of degrees K. They also exhibit eastward hotspot offsets whereby the hottest region on the planet is east of the substellar point; this has been widely interpreted as advection of heat due to eastward winds. We present thermal phase observations of the hot Jupiter CoRoT-2b obtained with the IRAC instrument on the Spitzer Space Telescope. These measurements show the most robust detection to date of a westward hotspot offset of 23 ± 4 degrees, in contrast with the nine other planets with equivalent measurements. The peculiar infrared flux map of CoRoT-2b may result from westward winds due to non-synchronous rotation magnetic effects, or partial cloud coverage, that obscures the emergent flux from the planet's eastern hemisphere. Non-synchronous rotation and magnetic effects may also explain the planet's anomalously large radius. On the other hand, partial cloud coverage could explain the featureless dayside emission spectrum of the planet. If CoRoT-2b is not tidally locked, then it means that our understanding of star-planet tidal interaction is incomplete. If the westward offset is due to magnetic effects, our result represents an opportunity to study an exoplanet's magnetic field. If it has Eastern clouds, then it means that our understanding of large-scale circulation on tidally locked planets is incomplete.

Download/Website: `https://arxiv.org/pdf/1801.06548.pdf`

Contact: `lisa.dang@physics.mcgill.ca`

The effect of metallicity on the atmospheres of exoplanets with fully coupled 3D hydrodynamics, equilibrium chemistry, and radiative transfer

B. Drummond[1], *N. J. Mayne*[1], *I. Baraffe*[1,2], *P. Tremblin*[3], *J. Manners*[1,4], *D. S. Amundsen*[5,6], *J. Goyal*[1], *D. Acreman*[1]

[1] Astrophysics Group, University of Exeter, EX4 4QL, Exeter, UK
[2] Univ Lyon, Ens de Lyon, Univ Lyon1, CNRS, CRAL, UMR5574, F-69007, Lyon, France
[3] Maison de la simulation, CEA, CNRS, Univ. Paris-Sud, UVSQ, Universit Paris-Saclay, 91191 Gif-Sur-Yvette, France
[4] Met Office, Exeter, EX1 3PB, UK
[5] Department of Applied Physics and Applied Mathematics, Columbia University, New York, NY 10025, USA
[6] NASA Goddard Institute for Space Studies, New York, NY 10025, USA

Astronomy and Astrophysics, in press (arXiv:1801.01045)

In this work we have performed a series of simulations of the atmosphere of GJ 1214b assuming different metallicities using the Met Office Unified Model (UM). The UM is a general circulation model (GCM) that solves the deep, non-hydrostatic equations of motion and uses a flexible and accurate radiative transfer scheme, based on the two-stream and correlated-k approximations, to calculate the heating rates. In this work we consistently couple a well-tested Gibbs energy minimisation scheme to solve for the chemical equilibrium abundances locally in each

grid cell for a general set of elemental abundances, further improving the flexibility and accuracy of the model. As the metallicity of the atmosphere is increased we find significant changes in the dynamical and thermal structure, with subsequent implications for the simulated phase curve. The trends that we find are qualitatively consistent with previous works, though with quantitative differences. We investigate in detail the effect of increasing the metallicity by splitting the mechanism into constituents, involving the mean molecular weight, the heat capacity and the opacities. We find the opacity effect to be the dominant mechanism in altering the circulation and thermal structure. This result highlights the importance of accurately computing the opacities and radiative transfer in 3D GCMs.

Download/Website: https://arxiv.org/abs/1801.01045

Contact: b.drummond@exeter.ac.uk

Suppressed Far-UV Stellar Activity and Low Planetary Mass Loss in the WASP-18 System

L. Fossati[1], *T. Koskinen*[2], *K. France*[3,4], *P. E. Cubillos*[1], *C. A. Haswell*[5], *A. F. Lanza*[6], *I. Pillitteri*[7,8]

[1] Space Research Institute, Austrian Academy of Sciences, Schmiedlstrasse 6, A-8042 Graz, Austria
[2] Lunar and Planetary Laboratory, University of Arizona, 1629 East University Boulevard, Tucson, AZ 85721-0092, USA
[3] Laboratory for Atmospheric and Space Physics, University of Colorado, 600 UCB, Boulder, CO 80309, USA
[4] Center for Astrophysics and Space Astronomy, University of Colorado, 389 UCB, Boulder, CO 80309, USA
[5] Department of Physical Sciences, The Open University, Walton Hall, Milton Keynes MK7 6AA, UK
[6] INAF – Osservatorio Astrofisico di Catania, Via S. Sofia 78, I-95123 Catania, Italy
[7] INAF – Osservatorio Astronomico di Palermo G.S. Vaiana, Piazza del Parlamento 1, I-90134, Palermo, Italy
[8] Harvard-Smithsonian Center for Astrophysics, 60 Garden St., Cambridge, MA, USA

The Astronomical Journal, in press (arXiv:1802.00999)

WASP-18 hosts a massive, very close-in Jupiter-like planet. Despite its young age (<1 Gyr), the star presents an anomalously low stellar activity level: the measured $\log R'_{\rm HK}$ activity parameter lies slightly below the basal level; there is no significant time-variability in the $\log R'_{\rm HK}$ value; there is no detection of the star in the X-rays. We present results of far-UV observations of WASP-18 obtained with COS on board of *Hubble Space Telescope* aimed at explaining this anomaly. From the star's spectral energy distribution, we infer the extinction ($E(B-V) \approx 0.01$ mag) and then the interstellar medium (ISM) column density for a number of ions, concluding that ISM absorption is not the origin of the anomaly. We measure the flux of the four stellar emission features detected in the COS spectrum (C II, C III, C IV, Si IV). Comparing the C II/C IV flux ratio measured for WASP-18 with that derived from spectra of nearby stars with known age, we see that the far-UV spectrum of WASP-18 resembles that of old (>5 Gyr), inactive stars, in stark contrast with its young age. We conclude that WASP-18 has an intrinsically low activity level, possibly caused by star–planet tidal interaction, as suggested by previous studies. Re-scaling the solar irradiance reference spectrum to match the flux of the Si IV line, yields an XUV integrated flux at the planet orbit of 10.2 erg s^{-1} cm^{-2}. We employ the rescaled XUV solar fluxes to models of the planetary upper atmosphere, deriving an extremely low thermal mass-loss rate of $10^{-20}\,M_{\rm J}\,{\rm Gyr}^{-1}$. For such high-mass planets, thermal escape is not energy limited, but driven by Jeans escape.

Download/Website: http://arxiv.org/abs/1802.00999

Contact: luca.fossati@oeaw.ac.at

Precision Orbit of δ Delphini and Prospects for Astrometric Detection of Exoplanets

Tyler Gardner[1], *John D. Monnier*[1], *Francis C. Fekel*[2], *Mike Williamson*[2], *Douglas K. Duncan*[3], *Timothy R. White*[10], *Michael Ireland*[13], *Fred C. Adams*[12], *Travis Barman*[16], *Fabien Baron*[15], *Theo ten Brummelaar*[14], *Xiao Che*[1], *Daniel Huber*[789], *Stefan Kraus*[5], *Rachael M. Roettenbacher*[4], *Gail Schaefer*[14], *Judit Sturmann*[14], *Laszlo Sturmann*[14], *Samuel J. Swihart*[6], *Ming Zhao*[11]

[1] Astronomy Department, University of Michigan, Ann Arbor, MI 48109, USA
[2] Center of Excellence in Information Systems, Tennessee State University, Nashville, TN 37209, USA
[3] Dept. of Astrophysical and Planetary Sciences, Univ. of Colorado, Boulder, Colorado 80309, USA
[4] Department of Astronomy, Stockholm University, SE-106 91 Stockholm, Sweden
[5] University of Exeter, School of Physics, Astrophysics Group, Stocker Road, Exeter EX4 4QL, UK
[6] Department of Physics and Astronomy, Michigan State University, East Lansing, MI 48824, USA
[7] Institute for Astronomy, University of Hawai'i, 2680 Woodlawn Drive, Honolulu, HI 96822, USA
[8] Sydney Institute for Astronomy (SIfA), School of Physics, University of Sydney, NSW 2006, Australia
[9] SETI Institute, 189 Bernardo Avenue, Mountain View, CA 94043, USA
[10] Stellar Astrophysics Centre, Department of Physics and Astronomy, Aarhus University, Ny Munkegade 120, DK-8000 Aarhus C, Denmark
[11] Department of Astronomy & Astrophysics, The Pennsylvania State University, 525 Davey Lab, University Park, PA 16802
[12] Physics Department, University of Michigan, Ann Arbor, MI 48109, USA
[13] Research School of Astronomy & Astrophysics, Australian National University, Canberra ACT 2611, Australia
[14] The CHARA Array of Georgia State University, Mount Wilson Observatory, Mount Wilson, CA 91203, USA
[15] Department of Physics and Astronomy, Georgia State University, Atlanta, GA, USA
[16] Lunar and Planetary Laboratory, University of Arizona, Tucson AZ 85721 USA

The Astrophysical Journal, in press (arXiv:1802.00468)

Combining visual and spectroscopic orbits of binary stars leads to a determination of the full 3D orbit, individual masses, and distance to the system. We present a full analysis of the evolved binary system δ Delphini using astrometric data from the MIRC and PAVO instruments on the CHARA long-baseline interferometer, 97 new spectra from the Fairborn Observatory, and 87 unpublished spectra from Lick Observatory. We determine the full set of orbital elements for δ Del, along with masses of $1.78 \pm 0.07\ M_\odot$ and $1.62 \pm 0.07\ M_\odot$ for each component, and a distance of 63.61 ± 0.89 pc. These results are important in two contexts: for testing stellar evolution models and defining the detection capabilities for future planet searches. We find that the evolutionary state of this system is puzzling, as our measured flux ratios, radii, and masses imply a ~ 200 Myr age difference between the components using standard stellar evolution models. Possible explanations for this age discrepancy include mass transfer scenarios with a now ejected tertiary companion. For individual measurements taken over a span of 2 years we achieve < 10 μ-arcsecond precision on differential position with 10-minute observations. The high precision of our astrometric orbit suggests that exoplanet detection capabilities are within reach of MIRC at CHARA. We compute exoplanet detection limits around δ Del, and conclude that if this precision is extended to wider systems we should be able to detect most exoplanets $> 2\ M_J$ on orbits > 0.75 AU around individual components of hot binary stars via differential astrometry.

Download/Website: `http://arxiv.org/abs/1802.00468`

Contact: `tgardne@umich.edu`

Limitation of atmospheric composition by combustion-explosion in exoplanetary atmospheres

J.L. Grenfell[1], *S. Gebauer*[1], *M. Godolt*[2],*B. Stracke*[1],*R. Lehmann*[3],*H. Rauer*[1,2],

[1] Dept. Extrasolar Planets and Atmospheres (EPA), Inst. Planetary Research, German Aerospace Centre (DLR), Berlin Adlershof, Germany
[2] Centre for Astronomy and Astrophysics (ZAA), Berlin Inst. Technology (TUB), Berlin, Germany
[3] Alfred-Wegener-Inst. (AWI), Potsdam, Germany

ApJ, in press (arXiv:1802.02923)

This work presents theoretical studies which combine aspects of combustion and explosion theory with exoplanetary atmospheric science. Super-Earths could possess a large amount of molecular hydrogen depending on disk, planetary and stellar properties. Super-Earths orbiting pre-main sequence-M-dwarf stars have been suggested to possess large amounts of O2(g) produced abiotically via water photolysis followed by hydrogen escape . If these two constituents were present simultaneously, such large amounts of H2(g) and O2(g) can react via photochemistry to form up to 10 Earth oceans. In cases where photochemical removal is slow so that O2(g) can indeed build-up abiotically, the atmosphere could reach the combustion-explosion limit. Then, H2(g) and O2(g) react extremely quickly to form water together with modest amounts of hydrogen peroxide. These processes set constraints for H2(g), O2(g) atmospheric compositions in Super-Earth atmospheres. Our initial study of the gas-phase oxidation pathways for modest conditions (Earths insolation and a tenth of a percent of H2(g)) suggests that H2(g) is oxidized by O2(g) into H2O(g) mostly via HOx and mixed HOx-NOx catalyzed cycles. Regarding other atmospheric species-pairs we find that (CO-O2) could attain explosive-combustive levels on mini gas planets for mid-range C/O in the equilibrium chemistry regime (p¿ 1bar). Regarding (CH4-O2), a small number of modeled rocky planets assuming Earth-like atmospheres orbiting cooler stars could have compositions at or near the explosive-combustive level although more work is required to investigate this issue.

Download/Website: `https://arxiv.org/abs/1802.02923`

Contact: `lee.grenfell@dlr.de`

ALMA observations of the narrow HR 4796A debris ring

Grant M. Kennedy[1], *Sebastian Marino*[2], *Luca Matrà*[3], *Olja Panić*[4], *David Wilner*[3], *Mark C. Wyatt*[2], *Ben Yelverton*[2]

[1] Department of Physics, University of Warwick, Gibbet Hill Road, Coventry, CV4 7AL, UK
[2] Institute of Astronomy, University of Cambridge, Madingley Road, Cambridge CB3 0HA, UK
[3] Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138, USA
[4] School of Physics and Astronomy, University of Leeds, Leeds LS2 9JT, UK

Monthly Notices of the Royal Astronomical Society, in press (2018MNRAS.tmp..137K)

The young A0V star HR 4796A is host to a bright and narrow ring of dust, thought to originate in collisions between planetesimals within a belt analogous to the Solar System's Edgeworth-Kuiper belt. Here we present high spatial resolution 880μm continuum images from the Atacama Large Millimeter Array. The 80au radius dust ring is resolved radially with a characteristic width of 10au, consistent with the narrow profile seen in scattered light. Our modelling consistently finds that the disk is also vertically resolved with a similar extent. However, this extent is less than the beam size, and a disk that is dynamically very cold (i.e. vertically thin) provides a better theoretical explanation for the narrow scattered light profile, so we remain cautious about this conclusion. We do not detect ^{12}CO J=3-2 emission, concluding that unless the disk is dynamically cold the CO+CO_2 ice content of the planetesimals is of order a few percent or less. We consider the range of semi-major axes and masses of an interior planet supposed to cause the ring's eccentricity, finding that such a planet should be more massive than Neptune and orbit beyond

40au. Independent of our ALMA observations, we note a conflict between mid-IR pericenter-glow and scattered light imaging interpretations, concluding that models where the spatial dust density and grain size vary around the ring should be explored.

Download/Website: `https://doi.org/10.1093/mnras/sty135`

Contact: `g.kennedy@warwick.ac.uk`

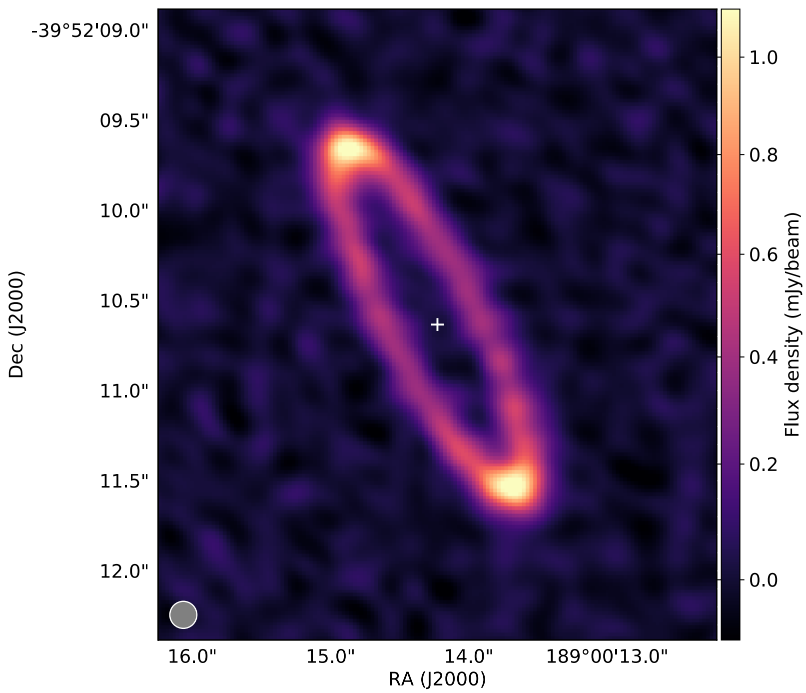

Figure 3: Kennedy et al.: Self-calibrated Briggs-weighted ALMA image of the disk around HR 4796A (robust = 0.5). The filled circle in the lower left corner shows the beam of 0.16×0.18”. The star is not detected but it’s location is marked by a +, and with a distance of 72.8pc the diameter of the ring is approximately 160au.

Decryption of messages from extraterrestrial intelligence using the power of social media – The SETI Decrypt Challenge

René Heller[1]

[1] Max Planck Institute for Solar System Research, Justus-von-Liebig-Weg 3, 37077 Göttingen, Germany

International Journal of Astrobiology (Cambridge University Press), accepted (arXiv:1706.00653)

With the advent of modern astronomy, humans might now have acquired the technological and intellectual requirements to communicate with other intelligent beings beyond the solar system, if they exist. Radio signals have been identified as a means for interstellar communication about 60 years ago. And the Square Kilometer Array will be capable of detecting extrasolar radio sources analogous to terrestrial high-power radars out to several tens of light years. The ultimate question is: will we be able to understand the message or, vice versa, if we submit a message to extraterrestrial intelligence first, how can we make sure that they will understand us? Here I report on the largest blind experiment of a pretend radio message received on Earth from beyond the solar system. I posted a sequence of about two million binary digits (’0’ and 1’) to the social media that encoded a configuration frame, two slides with mathematical content and four images along with spatial and temporal information about their contents. Six questions were asked that would need to be answered to document the successful decryption of the message. Within a month after the posting, over 300 replies were received in total, including comments and requests for

hints, 66 of which contained the cor- rect solutions. About half of the solutions were derived fully independently, the other half profited from public online discussions and spoilers. This experiment demonstrates the power of the world wide web to help interpreting possible future messages from extraterrestrial intelligence and to test the decryptability of our own deliberate interstellar messages.

Download/Website: https://doi.org/10.1017/S1473550417000568

Contact: heller@mps.mpg.de

```
(line 1)
111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111
111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111
111111111111111111111111111111111111111111111111111111111111111111111111111111111111111111
11111111111111111111111111111111111111111111111111111111111111111111111111111111111111111

...
(line 2)
000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000001

...
(line 3108, or line 80 on page 5)
000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
010101000000000000000000000001000101010101010101010101010101010101010101010101010101000000
000101010001000100000000000001010101000100000000000000000000000000000000000000000000000000
00000000000000000000000000000000000000000000000000000000000000000000000000000000000000000
```

Figure 4: Heller: Left: Arrangement of the message on a 359 × 757 pixel map, where '1' is converted into a black pixel and '0' is converted into a white pixel. This conversion is arbitrary, the negative of this image contains the same information. Right: Sequence of binary digits that constitute the pretend SETI message. Three excerpts are shown. The entire message contains $7 \times 359 \times 757 = 1,902,341$ bits. The lines denoted on top of each excerpt refer to an arrangement of 359 pixels (width) times 757 pixels (height) of this string of binary digits.

3 Jobs and Positions

PhD position on Stellar Winds of M dwarfs

Aline Vidotto
School of Physics, Trinity College Dublin, Ireland

Dublin, 3 Sept 2018

A PhD position is available to work on "Stellar winds of M dwarfs". The student will work under supervision of Prof Aline Vidotto at Trinity College, Dublin, Ireland. The project involves the use of 3D state-of-the-art numerical codes to model winds of M dwarfs and assess the wind interaction with orbiting exoplanets. M dwarfs are currently the main targets in searches for potentially-habitable terrestrial exoplanets The work will make use of magnetic maps derived from observations through the Bcool consortium and through the SPIRou Legacy Survey. The deadline for applying for this position is **18 March 2018**. More info on the website below.

Download/Website: https://www.tcd.ie/Physics/research/groups/vidotto/

Contact: astro.jobs@tcd.ie

Understanding the atmospheres and climates of nearby potentially habitable rocky exoplanets

Hugo Lambert and Nathan Mayne
University of Exeter, Exeter, UK

University of Exeter, From 1st April 2018

The College of Engineering, Mathematics and Physical Sciences wishes to recruit a Postdoctoral Research Fellow to support the research of Hugo Lambert and Nathan Mayne into understanding the atmospheres and climates of nearby potentially habitable rocky exoplanets.
This is an STFC funded post within the Centre for Geophysical and Astrophysical Fluid Dynamics and the Astrophysics group at the University of Exeter and this new full-time post is available for 36 months from 1 April 2018 on a fixed term basis until 31 March 2021 (a later start date is possible). Initial work will focus on using high resolution cloud resolving simulations to understand the interaction between small scale convection, cloud processes and the large-scale state of the surface, atmosphere and climate on a variety of planets.
Numerical model simulations will be performed within the UK Met Office Unified Model framework, which has been adapted by Exeter for simulation of terrestrial and giant planetary atmospheres. The postholder will have the opportunity to interact with a large range of astrophysicists, planetary and Earth scientists spread across the Mathematics and Physics departments as well as collaborating with staff at the Met Office. There will be substantial opportunity for the Research Fellow to develop their own research interests.

Download/Website: https://jobs.exeter.ac.uk/hrpr_webrecruitment/wrd/run/ETREC107GF.open?VACANCY_ID=322882KiTU&WVID=3817591jNg&LANG=USA

Contact: f.h.lambert@exeter.ac.uk

Postdoc position on exoplanet atmosphere modelling

Dr. Luca Fossati

Space Research Institute, Austrian Academy of Sciences, Graz, Austria, Not later than September 2018

The institute invites applications for a two years postdoc position at the Space Research Institute (IWF, Graz) in Austria to join the exoplanet group led by Dr. Luca Fossati. The group concentrates on the multi-wavelength observational and theoretical characterisation of exoplanet atmospheres, and in particular of planetary upper atmospheres. The group is also heavily involved at the scientific and/or engineering level in ESA and NASA missions, such as CHEOPS, PLATO, and CUTE. The work, funded by the Austrian Academy of Sciences, is highly relevant to both NASA CUTE and LUVOIR missions.

The Space Research Institute is the focus of Austria's space research and development. It is involved in about 20 missions led by most of the main world space agencies. These include CHEOPS, PLATO, CUTE, and all major ESA and NASA Solar System missions. The group, currently composed by the group leader, five postdocs, and a PhD student, is highly international and it naturally fosters close collaborations among the team members.

The applicant must hold a PhD in Physics, Geophysics, Astrophysics, or a related field. Preference will be given to candidates with direct experience in radiative transfer modelling, in particular on non-local thermodynamical equilibrium computations. The successful applicant is expected to develop a new radiative transfer code on the basis of already existing tools and to apply it to a variety of planetary atmospheres to study the detectability of specific features of biological interest. Further knowledge and expertise on planetary atmospheres is desired, but not necessary. The successful applicant will also be encouraged to pursue independent research, both observational and theoretical, possibly in line with the group's interests.

The appointment begins as early as possible and not later than September 2018, and will be for two years. Salary will be Grade IV/2 (about 41,500 Euro per year, gross), according to the scale of the Austrian Academy of Sciences.

Applications include 1) curriculum vitae, 2) list of publications, 3) statement of applicant's past and current research experience (max 2 pages), 4) academic certificates, and 5) names of two persons, who are willing to send letters of recommendation.

Applications should be sent electronically via email to luca.fossati@oeaw.ac.at in a single PDF file. The closing date of applications is 1st of April 2018.

The Austrian Academy of Sciences is an equal opportunity employer and in particular invites women to apply.

For more information, contact Dr. Luca Fossati (luca.fossati@oeaw.ac.at).

Download/Website: `http://www.iwf.oeaw.ac.at/en/research/exo-planetary-physics/exoplanets/`
Contact: `luca.fossati@oeaw.ac.at`

Permanent PLATO Science consortium position

Prof. D. L. Pollacco
Department of Physics, University of Warwick, Gibbet Hill Road, Coventry, CV4 7AL, UK

University of Warwick, UK

Applications are invited for a full time and permanent Research Fellow position at the University of Warwick, UK. **Closing date for applications is 23rd March 2018.**

The position is in support of ESA's M-class PLATO mission, and is based in the Science Management Office. It is funded by the UK Space Agency and the University of Warwick.

The successful candidate will hold a PhD degree, a proven research track record, and preferably experience of working in an (international) project environment.

Duties include organisational support of the PLATO Science consortium, and there will be other opportunities to become involved with the PLATO mission, both technically and scientifically. Opportunities are also available to become scientifically involved in ESA's first S-class mission, CHEOPS (due for launch in 2018), and in ground based experiments in which Warwick has significant roles (e.g. NGTS and SuperWASP). We expect that some of the post holder's time will be available for research, preferably in the area of extra-solar planets with the Astronomy and Astrophysics Group at Warwick.

An application form MUST be completed if you wish to be considered for this post. Applicants should also submit a signed covering letter, concise description of research accomplishments, relevant organisational and technical experience (including computing experience), and a CV including a full publication list.

Information about the PLATO Science consortium: `https://warwick.ac.uk/plato-science/`

Information about the Astronomy & Astrophysics Group:
`https://warwick.ac.uk/fac/sci/physics/research/astro/h`

Download/Website: `http://bit.ly/2GReDQH`
Contact: `d.pollacco@warwick.ac.uk`

4 Conference announcements

Formation of substellar objects: theory and observations

David Barrado[1], María Morales-Calderón[1], Nuria Huélamo[1] and Carlos Eiroa[2], on behalf of the SOC and LOC
[1] Centro de Astrobiología, (CSIC-INTA)
[2] Universidad Autónoma de Madrid

ESAC, Madrid, Spain, May 21-23, 2018

On behalf of Local and Scientific Organizing Committees, we are pleased to announce a three days workshop devoted to brown dwarfs and their formation mechanism/s. More than 20 years have passed since the discovery of the first confirmed substellar objects. However, there are still many problems concerning brown dwarf formation and evolution.

During the last years, a large number of works have been focused on explaining the origin of brown dwarfs. Thanks to Spitzer, Herschel and lately ALMA, there are now evidences of a star-like scenario to explain the formation of these substellar objects. However, there are still open questions, like the role of turbulence, and the efficiency of other mechanisms (e.g. photo-evaporation, disk fragmentation) to produce BDs. On the other hand, the study of young clusters is producing more and more spectroscopically confirmed substellar IMFs, which are fundamental to understand BD formation and evolution.

The scope of this workshop is to gather experts on BD formation, both theoreticians and observational astronomers, to discuss about the results of the last decade. We plan to compare the theoretical expectations with the results from observations to understand which questions have been answered, and which ones are still open. Moreover, experts from other fields, such as exoplanets and chemical modeling, are welcome since one of the goals is to study the phenomena from a comprehensive perspective and to produce new synergies and projects. In addition, we will discuss about the advances that can be done in this field with the advent of new facilities like e.g. JWST or Euclid.

CONFIRMED INVITED SPEAKERS:
Matthew R. Bate (University of Exeter, UK)
Gilles Chabrier (cole Normale Suprieure de Lyon, France)
Masahiro N. Machida (Kyushu University, Japan)
Estelle Moraux (Univ. Grenoble Alpes, CNRS, France)
Aina Palau (Instituto de Radioastronoma y Astrofsica, UNAM, Mexico)
Ken Rice (University of Edimburgh, UK)
Luca Ricci (California State University, Northridge & JPL, USA)

SCIENTIFIC ORGANIZING COMMITTEE:
David Barrado (CAB, co-chair)
Carlos Eiroa (UAM, co-chair)
Amelia Bayo (U. De Valparaso, Chile)
Philippe Andr (CEA Saclay, France)
Itziar de Gregorio-Monsalvo (ESO/ALMA, Chile)
Michael Dunham (State University NY at Fredonia, US)
Basmah Riaz (MPE Garching, Germany)
Dimitris Stamatellos (University of Central Lancashire, UK)
Aina Palau (UNAM, Mxico)
Oscar Morata (ASIAA, Taiwan)
Chang Won Lee (KASI, Republic of Korea)
Erick Young (NASA Ames, USA)

IMPORTANT DATES:
- Registration is now OPEN
- Deadline for abstract submission and early registration fee: March 15th, 2018

Download/Website: `http://www.laeff.cab.inta-csic.es/projects/ws18/main/index.php`

Contact: `fso2018@cab.inta-csic.es`

High Resolution Spectroscopy for Exoplanet atmospheres

Andrea Chiavassa and Matteo Brogi

Nice, France, 1-5 October 2018

Dear colleagues,
We are glad to annonce the "High Resolution Spectroscopy for Exoplanet atmospheres (HoRSE) workshop that will be held in Nice at the Observatoire de la Cote dAzur from 1 to 5 October 2018.
Website: http://horse.sciencesconf.org

The registration is 120 euros and includes lunch and coffe breaks. The social dinner costs 36 euros: https://horse.sciencesconf.org/resource/page/id/5
We encourage everybody, and in particular PhD and Postdoc, to apply and to submit a contribution: https://horse.sciencesconf.org/submission/submit
We provide some financial support for young researchers, please apply before April 30th 2018: https://horse.sciencesconf.org/resource/page/id/1

IMPORTANT DATES

- January, 2018: First announcement. Registration is OPEN
- April 30th, 2018: Deadline for financial support request check here for information
- June 30th, 2018: Deadline for registration and abstract submission
- October 1st, 2018: The workshop starts

Looking forward to see you in Nice in October,
Andrea Chiavassa and Matteo Brogi on behalf of the SOC

SCIENTIFIC RATIONALE
The search for signs of life elsewhere in the Universe requires the remote detection of molecules in the atmospheres of exoplanets. Progress with high-resolution spectroscopy with ground-based instruments has led to detections of atomic (Na) and molecular species (CO, H2O) in the atmospheres of hot giants. From the Doppler shift of the planet spectral lines, it has been possible to constrain atmospheric winds, planet rotation, and even the orbital inclination of non-transiting planets. Not only do current detections inform us about the composition and thermal structure of planetary atmospheres, but they also have the potential to constrain the universal mechanism for planet formation (preferential birth location of the planet in its protoplanetary disc, etc.). However, the planet-hosting stars are covered with a complex and stochastic patterns associated with convective heat transport (i.e., granulation). The resulting stellar activity, associated to other phenomena such as magnetic spots and rotation, can bias the detection and characterization of exoplanetary signals. The synergy between stellar physics and planetology is essential to interpret and quantify exoplanet spectra.

The advent of new high-resolution spectrographs at large and medium-size telescope facilities (CRIRES+, GIARPS, SPIRou, IGRINS, iSHELL, etc...) with unprecedented throughput and spectral range will extend the sample of exoplanets that can be targeted with this technique towards cooler and smaller planets. Given the high degree of complementarity between high-resolution spectroscopy from the ground and low-resolution spectroscopy from space, coupling measurements from the two techniques will be crucial for the next stage of comparative exo-planetology, especially on the targets found by the TESS mission. When finally implemented at Extremely Large Telescopes, high-resolution spectroscopy will have the potential to identify biomarkers in the atmospheres of terrestrial planets in the habitable zone of M-dwarf stars.

INVITED SPEAKERS

Atmospheric characterization of exoplanets at high spectral resolution and its synergy with low-resolution spectroscopy
Eliza Kempton - Grinnell College (USA)
Michael Line - Arizona State University (USA)
Ignas Snellen - University of Leiden (The Netherlands)

Stellar spectra as background sources in exoplanet characterization: modeling and understanding the star to avoid spurious noise and contextualize the system
Remo Collet - Aarhus University (Denmark) — to be confirmed
Jean-Francois Donati - IRAP (France) — to be confirmed
Raphalle Haywood - CfA Harward (USA)

A roadmap towards detecting biomarkers: Earth analogs
Christophe Lovis - Geneva Observatory (Switzerland)
Victoria Meadows - University of Washington (USA)
Clara Sousa-Silva - MIT (USA)

Download/Website: `https://horse.sciencesconf.org`
Contact: `horse@sciencesconf.org`

Exoplanets Orbiting Hot Stars

Scientific Organizing Committee: Karen A. Collins[1], B. Scott Gaudi[2], Marshall C. Johnson[2], Keivan G. Stassun[3], Joshua Pepper[4]
[1] Harvard-Smithsonian Center for Astrophysics
[2] The Ohio State University
[3] Vanderbilt University
[3] Lehigh University

Nashville, Tennessee, USA, 20-22 June 2018

In the era of TESS and Gaia, many of the brightest and best characterized exoplanet hosts will be hot stars. Recent advances in technology and methodology have enabled the discovery and study of exoplanets around hot stars. This meeting will bring together experts on such planets, the stars they orbit, and the many different observational and theoretical methods used to study them. Topics will include planet detection methods; characterization of the host stars; planetary atmospheres; planetary demographics; planet formation and evolution; and upcoming missions and future prospects.

Registration and abstract submission are now open. The abstract submission deadline is 4 May 2018.

Confirmed invited speakers: Brendan Bowler (Texas), Joleen Carlberg (STScI), Andrew Collier Cameron (St. Andrews), Kaitlin Kratter (Arizona), Ann-Marie Lagrange (Grenoble), David Latham (Harvard-Smithsonian CfA), Simon Murphy (Sydney), Ruth Murray-Clay (UC Santa Cruz), Eric Nielsen (Gemini), Don Pollacco (Warwick), Andrew Tkachenko (KU Leuven), Siyi Xu (Gemini).

Download/Website: `vu.edu/planetsaroundhotstars`

Contact: `johnson.7240@osu.edu`

2018 Sagan Summer Workshop: Did I Really Just Find an Exoplanet?

D. Gelino, E. Furlan
NASA Exoplanet Science Institute, California Institute of Technology, Pasadena, CA, USA

Pasadena, CA, July 23-27, 2018

The 2018 Sagan Summer Workshop will gather leaders in the field to focus on follow-up work to validate and characterize exoplanet discoveries. The follow-up needs for direct imaging, astrometry, and microlensing, radial velocity and transit detections of planets are similar but differ in the details. These differences will be discussed and explored covering what each method can detect and the shortcomings of each, with particular focus on the transit and radial velocity techniques. Attendees will participate in hands-on group projects applying tools to real data in order to validate planets. They will have the opportunity to present their own work through short presentations (research POPs) and posters.

The Sagan Summer Workshops are aimed at graduate and post doctoral level students, however anyone who is interested in learning more about the field is welcome to attend.

NASA attendees must forecast their attendance by the Feb. 23 deadline.

Topics to be covered include:

- Transit Photometry
- Follow-up Observations of Transit Candidates
- Radial Velocity Surveys
- Understanding Host Stars
- Planetary Characterization Observations
- Microlensing
- Finding Planets with Direct Imaging
- Astrometry

Important Dates in 2018

- February 5, 2018: On-line Registration available and Financial Support application period open
- February 23, 2018: Deadline for NASA and JPL Employees to Forecast Attendance
- March 2, 2018: Financial Support applications and letters of support due
- March 16, 2018: Financial Support decisions announced via email

- May 1, 2018: POP/Poster/Talk submission link available and Food Ordering site open
- June 22, 2018: Hotel Reservation Deadline for both workshop hotels
- July 6, 2018: Deadline to submit POP and poster presentations
- July 13, 2018: Final agenda posted with POP schedule; deadline for food purchases
- July 23-27, 2018: Sagan Exoplanet Summer Workshop

Download/Website: http://nexsci.caltech.edu/workshop/2018
Contact: sagan_workshop@ipac.caltech.edu

Triple Evolution and Dynamics - TRENDY-2

Silvia Toonen[1]*, Hagai Perets*[2]*, Andrei Tokovinin*[3]*, Daniel Fabrycky*[4]
[1] Anton Pannekoek Instituut voor sterrenkunde, University of Amsterdam
[2] Physics Department, Technion - Israel Institute of Technology
[3] Cerro Tololo Inter-American Observatory
[4] Department of Astronomy and Astrophysics, University of Chicago

Lorentz Centre, Leiden, The Netherlands, September 10th-14th, 2018

We would like to announce the upcoming workshop on the evolution & dynamics of triples systems:

Triple Evolution and Dynamics - TRENDY-2
Lorentz Centre, Leiden, The Netherlands
September 10th-14th, 2018

In this meeting we aim to explore the various observational and theoretical aspects of triple evolution, and the unique role triples play in the formation of stellar and planetary systems. The workshop aims to serve as a focal point for researchers working on triple systems on all scales, from asteroids to stars to massive black holes. We aim to connect theorists and observers as well as link together and share knowledge and tools between groups working on similar questions, both on same scales as well as completely different scales. We will discuss the current state-of-the-art, identify open questions and find a way forward to answer them.
The workshop will consist of a few selected invited and contributed talks, poster presentation, as well as ample time for discussion.
There is no conference fee. Registration is not possible yet, but will follow soon.

Download/Website: http://www.lorentzcenter.nl/lc/web/2018/1016/info.php3?wsid=1016&venue=Oort

Contact: toonen@uva.nl

5 Other announcements

Fizeau exchange visitors program in optical interferometry - call for applications

European Interferometry Initiative

www.european-interferometry.eu, application deadline: Oct. 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. Applicants are strongly encouraged to seek also partial support from their home or host institutions.

The deadline for applications is March 15 for visits to be carried out between May 2018 and October 2018!.

Note: requests for support for the Fizeau school in July 2018 are NOT part of this call. Such requests will be handled by the school organizers.

Further informations and application forms can be found at: www.european-interferometry.eu
The program is funded by OPTICON/H2020.

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

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

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

Contact: `fizeau@european-interferometry.eu`

2018B NASA Keck Call for General Observing Proposals

Dr. Dawn M. Gelino, NASA Exoplanet Science Institute

Proposals Due: March 15, 2018 at 4 pm PDT,

NASA is soliciting proposals to use the Keck Telescopes for the 2018B observing semester (August 1, 2018 - January 31, 2019). Complete call information is available on the website below and all proposals are due by **March 15, 2018 at 4 pm PDT**.

The opportunity to propose as Principal Investigators for NASA time on the Keck Telescopes is open to all U.S.-based astronomers (a U.S.-based astronomer has their principal affiliation at a U.S. institution). *Investigators from institutions outside of the U.S. may participate as Co-Investigators on proposals for NASA Keck time.*.

NASA intends the use of the Keck telescopes to be highly strategic in support of on-going space missions and/or high priority, long-term science goals. Proposals are sought in the following discipline areas: (1) investigations in support of EXOPLANET EXPLORATION science goals and missions; (2) investigations of our own SOLAR

SYSTEM; (3) investigations in support of COSMIC ORIGINS science goals and missions; and (4) investigations in support of PHYSICS OF THE COSMOS science goals and missions. Direct mission support proposals in any of these scientific areas are also encouraged.

Key Dates:

- March 1: deadline to request General Mission Support letter from NASA HQ
- March 15: all proposals and supporting letters due to NExScI

Download/Website: `http://nexsci.caltech.edu/missions/KeckSolicitation/index.shtml`

Contact: `KeckCFP@ipac.caltech.edu`

%vspace*2cm

Microlensing Data Challenge Now Open

R.A. Street[1], and the WFIRST Microlensing Science Investigation Team
[1] Las Cumbres Observatory, 6740 Cortona Drive, Suite 102, Goleta, CA 93117, USA.

First data released Jan 26, 2018, Deadline: Oct 31, 2018

The analysis and modeling of microlensing events has always been a computationally-intensive and time-consuming task, requiring a powerful computer cluster as well as well sampled lightcurves. While the number of interesting events with adequate data remained fairly low, it has been practical to perform a careful interactive analysis of each one, often with the aid of a powerful computer cluster. Even so, a number of challenges remain.
This is expected to change with next-generation surveys, especially with the launch of WFIRST. This mission is expected to detect thousands of microlensing events, including hundreds of planetary events. Clearly, our analysis techniques need an upgrade to fully exploit this dataset. We are holding a microlensing data challenge to stimulate research into outstanding issues with modeling techniques and to encourage people from outside the current microlensing community to bring in diverse expertize.
The first in a planned series of simulated datasets has just been released. Each one will consist of a set of lightcurves with durations and cadence representing those expected from the WFIRST microlensing survey. The datasets will be designed to test our analysis capabilities in different ways. Full details can be found at the website below.

Download/Website: `http://microlensing-source.org/data-challenge`

Contact: `rstreet@lco.global`

6 As seen on astro-ph

The following list contains entries relating to exoplanet research that we spotted on astro-ph.

January 2018

astro-ph/1801.00052: **The Astrobiology of the Anthropocene** by *Jacob Haqq-Misra et al.*
astro-ph/1801.00412: **An HST/STIS Optical Transmission Spectrum of Warm Neptune GJ 436b** by *Joshua D. Lothringer et al.*
astro-ph/1801.00652: **Assessing the long-term variability of acetylene and ethane in the stratosphere of Jupiter** by *Henrik Melin et al.*
astro-ph/1801.00738: **The hidden depths of planetary atmospheres** by *Yan Betremieux, Mark R. Swain*
astro-ph/1801.00748: **Habitability of exoplanet waterworlds** by *Edwin S. Kite, Eric B. Ford*
astro-ph/1801.00849: **The HATNet and HATSouth Exoplanet Surveys** by *G. A. Bakos*
astro-ph/1801.00895: **Mass and energy capture from stellar winds for magnetized and unmagnetized planets: implications for atmospheric erosion and habitability** by *Eric G. Blackman , John A. Tarduno*
astro-ph/1801.00991: **Reconciling Magma-Ocean Crystallization Models with the present-day Structure of the Earth's mantle** by *Maxim D. Ballmer et al.*
astro-ph/1801.01045: **The effect of metallicity on the atmospheres of exoplanets with fully coupled 3D hydrodynamics, equilibrium chemistry, and radiative transfer** by *Benjamin Drummond et al.*
astro-ph/1801.01100: **Effects of friction and plastic deformation in shock-comminuted damaged rocks on impact heating** by *Kosuke Kurosawa, Hidenori Genda*
astro-ph/1801.01144: **Direct detection and characterization of M-dwarf planets using light echoes** by *William B. Sparks et al.*
astro-ph/1801.01223: **Investigating the early evolution of planetary systems with ALMA and the Next Generation Very Large Array** by *Luca Ricci et al.*
astro-ph/1801.01324: **Exoplanet-induced radio emission from M-dwarfs** by *S. Turnpenney et al.*
astro-ph/1801.01474: **Galactic Effects on Habitability** by *Nathan A. Kaib*
astro-ph/1801.01634: **Python Leap Second Management and Implementation of Precise Barycentric Correction (barycorrpy)** by *Shubham Kanodia, Jason Wright*
astro-ph/1801.01789: **Rotational Period Measurement of Planet Host HD 147379** by *Joshua Pepper*
astro-ph/1801.01991: **Core-exsolved SiO2 dispersal in the Earth's mantle** by *G. Helffrich, M. D. Ballmer, K. Hirose*
astro-ph/1801.02341: **Pebble isolation mass — scaling law and implications for the formation of super-Earths and gas giants** by *Bertram Bitsch et al.*
astro-ph/1801.02458: **Chaotic dynamics in the planar gravitational many-body problem with rigid body rotations** by *James A. Kwiecinski et al.*
astro-ph/1801.02489: **H- Opacity and Water Dissociation in the Dayside Atmosphere of the Very Hot Gas Giant WASP-18 b** by *Jacob Arcangeli et al.*
astro-ph/1801.02554: **Early 2017 observations of TRAPPIST-1 with Spitzer** by *Laetitia Delrez et al.*
astro-ph/1801.02658: **1I/2017 'Oumuamua-like Interstellar Asteroids as Possible Messengers from the Dead Stars** by *Roman R. Rafikov*
astro-ph/1801.02744: **The Importance of UV Capabilities for Identifying Inhabited Exoplanets with Next Generation Space Telescopes** by *Edward Schwieterman et al.*
astro-ph/1801.02814: **Breakthrough Listen Observations of 1I/'Oumuamua with the GBT** by *J. E. Enriquez et al.*
astro-ph/1801.02821: **Interstellar Interlopers: Number Density and Origins of 'Oumuamua-like Objects** by *Aaron Do, Michael A. Tucker, John Tonry*
astro-ph/1801.03146: **Venus: The Making of an Uninhabitable World** by *Stephen R. Kane et al.*

astro-ph/1801.03384: **On the diversity in mass and orbital radius of giant planets formed via disk instability** by *Simon Muller, Ravit Helled, Lucio Mayer*

astro-ph/1801.03478: **Empirical Temperature Measurement in Protoplanetary Disks** by *Erik Weaver, Andrea Isella, Yann Boehler*

astro-ph/1801.03502: **An ultra-short period rocky super-Earth with a secondary eclipse and a Neptune-like companion around K2-141** by *Luca Malavolta et al.*

astro-ph/1801.03510: **Protoplanetary Disc Response to Distant Tidal Encounters in Stellar Clusters** by *A. J. Winter et al.*

astro-ph/1801.03820: **Venus upper clouds and the UV-absorber from MESSENGER/MASCS observations** by *S. Perez-Hoyos et al.*

astro-ph/1801.03874: **The K2-138 System: A Near-Resonant Chain of Five Sub-Neptune Planets Discovered by Citizen Scientists** by *Jessie L. Christiansen et al.*

astro-ph/1801.03945: **Molecular reconnaissance of the β Pictoris gas disk with the SMA: a low HCN/(CO+CO2) outgassing ratio and predictions for future surveys** by *L. Matra et al.*

astro-ph/1801.03955: **A machine learns to predict the stability of circumbinary planets** by *Christopher Lam, David Kipping*

astro-ph/1801.03970: **The test case of HD26965: difficulties disentangling weak Doppler signals from stellar activity** by *Matias R. Diaz et al.*

astro-ph/1801.03993: **Survival Function Analysis of Planet Size Distribution** by *Li Zeng et al.*

astro-ph/1801.03994: **Survival Function Analysis of Planet Orbit Distribution and Occurrence Rate Estimate** by *Li Zeng et al.*

astro-ph/1801.04004: **Short arc orbit determination and imminent impactors in the Gaia era** by *F. Spoto et al.*

astro-ph/1801.04007: **The Moist Greenhouse is Sensitive to Stratospheric Temperature** by *Ramses M. Ramirez*

astro-ph/1801.04460: **Photometric Analysis and Transit Times of TRAPPIST-1 b and c** by *Brett M. Morris, Eric Agol, Suzanne L. Hawley*

astro-ph/1801.04856: **Improving Orbit Prediction Accuracy through Supervised Machine Learning** by *Hao Peng, Xiaoli Bai*

astro-ph/1801.04949: **Predicted Number, Multiplicity, and Orbital Dynamics of TESS M Dwarf Exoplanets** by *Sarah Ballard*

astro-ph/1801.05341: **Atmospheric Beacons of Life from Exoplanets Around G and K Stars** by *Vladimir S. Airapetian et al.*

astro-ph/1801.05424: **HD 104860 and HD 192758: two debris disks newly imaged in scattered-light with HST** by *E. Choquet et al.*

astro-ph/1801.05429: **ALMA observations of the narrow HR 4796A debris ring** by *Grant M. Kennedy et al.*

astro-ph/1801.05456: **The Delivery of Water During Terrestrial Planet Formation** by *David P. O'Brien et al.*

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