ExoPlanet News
An Electronic Newsletter

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Contents

1 Editorial

Welcome to the fifty fifth edition of ExoPlanet News. As usual, this month's newsletter contains a wide selection of abstracts reporting the latest discoveries in the field of exoplanet science as well as several notices of conferences and workshops.

My co-editor Glenn White has decided to step back from involvement in the Newsletter, but I'd lack to thank him for his involvement over the last few years and his encouragement of my idea to set it up in the first place.

The next edition of the newsletter is planned for early February 2013, so please send anything relevant over the next few weeks to exoplanet@open.ac.uk, and it will appear then. Remember that past editions of this newsletter, submission templates and other information can be found at the ExoPlanet News website: http://exoplanet.open.ac.uk.

Best wishes
Andrew Norton
The Open University

2 Abstracts of refereed papers

Photophoresis of dust aggregates in protoplanetary disks

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Astronomy & Astrophysics, published (2012A&A...548A..96V)

Photophoretic motion of dust agglomerates can play a role for the re-distribution and mixing of material in protoplanetary disks. The dust agglomerates can consist of various materials and may possess a variety of morphologies and sizes. This experimental study intends to investigate the influence of different dust materials and dust aggregate sizes on the photophoretic motion.Dust agglomerates were subjected to different light intensities and their respective photophoretic motion was observed under microgravity conditions and in a rarefied gas.The measured velocities for dust aggregates are on average proportional to the size of the dust aggregate, vary largely with material, and for a given material the velocity distribution for a single dust aggregate size is very broad and can be described by a Gaussian.

Download/Website: `http://adsabs.harvard.edu/abs/2012A%26A...548A..96V`

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The infrared colors of the Sun

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The Astrophysical Journal, published (2012, ApJ, 761, 16)

Solar infrared colors provide powerful constraints on the stellar effective temperature scale, but to this purpose they must be measured with both accuracy and precision. We achieve this requirement by using line-depth ratios to derive in a model independent way the infrared colors of the Sun, and use the latter to test the zero-point of the Casagrande et al. (2010) effective temperature scale, confirming its accuracy. Solar colors in the widely used 2MASS JHK_s and WISE $W1\,W2\,W3\,W4$ systems are provided: $(V-J)_\odot = 1.198$, $(V-H)_\odot = 1.484$, $(V-K_s)_\odot = 1.560$, $(J-H)_\odot = 0.286$, $(J-K_s)_\odot = 0.362$, $(H-K_s)_\odot = 0.076$, $(V-W1)_\odot = 1.608$, $(V-W2)_\odot = 1.563$, $(V-W3)_\odot = 1.552$, $(V-W4)_\odot = 1.604$. A cross check of the effective temperatures derived implementing 2MASS or WISE magnitudes in the infrared flux method (IRFM) confirms that the absolute calibration of the two systems agree within the errors, possibly suggesting a 1% offset between the two, thus validating extant near and mid infrared absolute calibrations. While 2MASS magnitudes are usually well suited to derive $T_{\rm eff}$, we find that a number of bright solar like stars exhibit anomalous WISE colors. In most cases this effect is spurious and traceable to lower quality measurements, although for a couple of objects ($3 \pm 2\%$ of the total sample) it might be real and hints towards the presence of warm/hot debris disks.

Download/Website: `http://arxiv.org/abs/1209.6127`

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Mean Motion Resonances in Exoplanet Systems: An Investigation into Nodding Behavior

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The Astrophysical Journal, in press

Motivated by the large number of extrasolar planetary systems that are near mean motion resonances, this paper explores a related type of dynamical behavior known as "nodding". Here, the resonance angle of a planetary system executes libration (oscillatory motion) for several cycles, circulates for one or more cycles, and then enters once again into libration. This type of complicated dynamics can affect our interpretation of observed planetary systems that are in or near mean motion resonance. This work shows that planetary systems in (near) mean motion resonance can exhibit nodding behavior, and outlines the portion of parameter space where it occurs. This problem is addressed using both full numerical integrations of the planetary systems and via model equations obtained through expansions of the disturbing function. In the latter approach, we identify the relevant terms that allow for nodding. The two approaches are in agreement, and show that nodding often occurs when a small body is in an external mean motion resonance with a larger planet. As a result, the nodding phenomenon can be important for interpreting observations of transit timing variations, where the existence of smaller bodies is inferred through their effects on larger, observed transiting planets. For example, in actively nodding planetary systems, both the amplitude and frequency of the transit timing variations depend on the observational time window.

Download/Website: `(arXiv:1211.3078)`

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Stellar Surface Magneto-Convection as a Source of Astrophysical Noise I. Multi-component Parameterisation of Absorption Line Profiles

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The Astrophysical Journal, in press (arXiv:1212.0236)

We outline our techniques to characterise photospheric granulation as an astrophysical noise source. A four component parameterisation of granulation is developed that can be used to reconstruct stellar line asymmetries and radial velocity shifts due to photospheric convective motions. The four components are made up of absorption line profiles calculated for granules, magnetic intergranular lanes, non-magnetic intergranular lanes, and magnetic bright points at disc centre. These components are constructed by averaging Fe I 6302 Å magnetically sensitive absorption line profiles output from detailed radiative transport calculations of the solar photosphere. Each of the four categories adopted are based on magnetic field and continuum intensity limits determined from examining three-dimensional magnetohydrodynamic simulations with an average magnetic flux of 200 G. Using these four component line profiles we accurately reconstruct granulation profiles, produced from modelling 12 x 12 Mm^2 areas on the solar surface, to within $\sim \pm$ 20 cm s^{-1} on a $\sim$ 100 m s^{-1} granulation signal. We have also successfully reconstructed granulation profiles from a 50 G simulation using the parameterised line profiles from the 200 G average magnetic field simulation. This test demonstrates applicability of the characterisation to a range of magnetic stellar activity levels.

Download/Website: `http://arxiv.org/abs/1212.0236`

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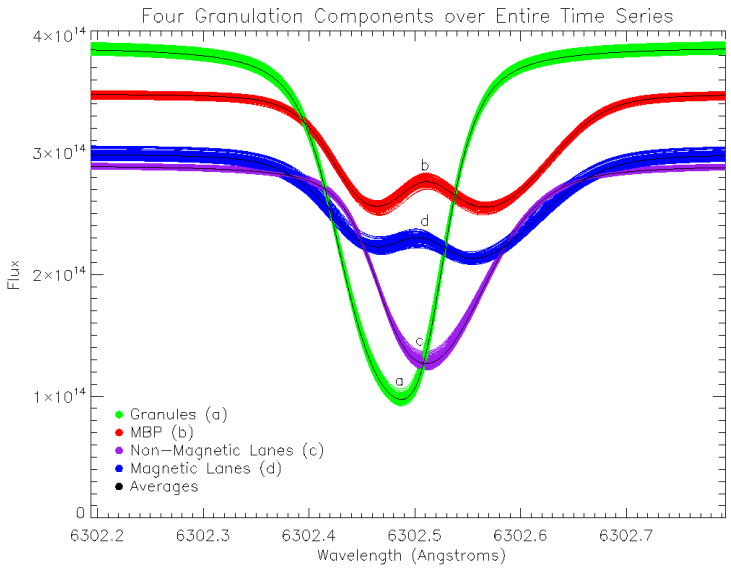

Figure 1: (Cegla et al.) Line profiles from the entire time series for the different physical components of granulation: granules (green), MBPs (red), magnetic (blue) and non-magnetic (purple) intergranular lanes. The time-average line profiles are shown in black. All components have been shifted by their bisector mean wavelength to the bisector mean wavelength of their time-average profile to remove the oscillation signal. The breadth about each component's respective means is representative of the precision obtained.

Near-ultraviolet Absorption, Chromospheric Activity, and Star-Planet Interactions in the WASP-12 system

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The Astrophysical Journal, published, 760, 79, 2012 November 20

Extended gas clouds have been previously detected surrounding the brightest known close-in transiting hot Jupiter exoplanets, HD 209458 b and HD 189733 b; we observed the distant but more extreme close-in hot Jupiter system, WASP-12, with Hubble Space Telescope (HST). Near-UV (NUV) transits up to three times deeper than the optical transit of WASP-12 b reveal extensive diffuse gas, extending well beyond the Roche lobe. The distribution of absorbing gas varies between visits. The deepest NUV transits are at wavelength ranges with strong stellar photospheric absorption, implying that the absorbing gas may have temperature and composition similar to those of the stellar photosphere. Our spectra reveal significantly enhanced absorption (greater than 3σ below the median) at ~ 200 individual wavelengths on each of two HST visits; 65 of these wavelengths are consistent between the two visits, using a strict criterion for velocity matching that excludes matches with velocity shifts exceeding ~ 20 km s^{-1}. Excess transit depths are robustly detected throughout the inner wings of the Mg II resonance lines independently on both HST visits. We detected absorption in Fe II $\lambda 2586$, the heaviest species yet detected in an exoplanet transit. The Mg II line cores have zero flux, emission cores exhibited by every other observed star of similar age and spectral type are conspicuously absent. WASP-12 probably produces normal Mg II profiles, but the inner portions of these strong resonance lines are likely affected by extrinsic absorption. The required Mg^{+} column is an order of magnitude greater than expected from the interstellar medium, though we cannot completely dismiss that possibility. A more plausible source of absorption is gas lost by WASP-12 b. We show that planetary mass loss can produce the required column. Our Visit 2 NUV light curves show evidence for a stellar flare. We show that some of the possible transit detections in resonance lines of rare elements may be due instead to non-resonant transitions in common species. We present optical observations and update the transit ephemeris.

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On the Habitable Zones of Circumbinary Planetary Systems

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The Astrophysical Journal, in press (arXiv:1211.2812)

The effect of the stellar flux on exoplanetary systems is becoming an increasingly important property as more planets are discovered in the Habitable Zone (HZ). The Kepler mission has recently uncovered circumbinary planets with relatively complex HZs due to the combined flux from the binary host stars. Here we derive HZ boundaries for circumbinary systems and show their dependence on the stellar masses, separation, and time while accounting for binary orbital motion and the orbit of the planet. We include stability regimes for planetary orbits in binary systems with respect to the HZ. These methods are applied to several of the known circumbinary planetary systems such as Kepler-16, 34, 35, and 47. We also quantitatively show the circumstances under which single-star approximations break down for HZ calculations.

Download/Website: `http://arxiv.org/abs/1211.2812`

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Decoupling Phase Variations in Multi-Planet Systems

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The Astrophysical Journal, in press (arXiv:1211.6747)

Due to the exquisite photometric precision, transiting exoplanet discoveries from the Kepler mission are enabling several new techniques of confirmation and characterization. One of these newly accessible techniques analyzes the phase variations of planets as they orbit their stars. The predicted phase variation for multi-planet systems can become rapidly complicated and depends upon the period, radius, and albedo distributions for planets in the system. Here we describe the confusion which may occur due to short-period terrestrial planets and/or non-transiting planets in a system, which can add high-frequency correlated noise or low-frequency trends to the data stream. We describe these sources of ambiguity with several examples, including that of our Solar System. We further show how decoupling of these signals may be achieved with application to the Kepler-20 and Kepler-33 multi-planet systems.

Download/Website: `http://arxiv.org/abs/1211.6747`

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An interferometric study of the Fomalhaut inner debris disk II. Keck Nuller mid-infrared observations

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The Astrophysical Journal, accepted for publication, arXiv:1211.7143

We report on high contrast mid-infrared observations of Fomalhaut obtained with the Keck Interferometer Nuller (KIN) showing a small resolved excess over the level expected from the stellar photosphere. The measured null excess has a mean value of 0.35% $\pm$ 0.10% between 8 and 11 μm and increases from 8 to 13 microns. Given the small field of view of the instrument, the source of this marginal excess must be contained within 2AU of Fomalhaut. This result is reminiscent of previous VLTI K-band ($\simeq 2\mu$m) observations, which implied the presence of a $\sim 0.88\%$ excess, and argued that thermal emission from hot dusty grains located within 6 AU from Fomalhaut was the most plausible explanation. Using a parametric 2D radiative transfer code and a Bayesian analysis, we examine different dust disk structures to reproduce both the near and mid-infrared data simultaneously. While not a definitive explanation of the hot excess of Fomalhaut, our model suggests that the most likely inner few AU disk geometry consists of a two-component structure, with two different and spatially distinct grain populations. The 2 to 11 microns data are consistent with an inner hot ring of very small ($\simeq$ 10 to 300 nm) carbon-rich grains concentrating around 0.1 AU. The second dust population - inferred from the KIN data at longer mid infrared wavelengths - consists of larger grains (size of a few microns to a few tens of microns) located further out in a colder region where regular astronomical silicates could survive, with an inner edge around 0.4 AU to 1 AU. From a dynamical point of view, the presence of the inner concentration of sub-micron sized grains is surprising, as such grains should be expelled from the inner planetary system by radiation pressure within only a few years. This could either point to some inordinate replenishment rates (e.g. many grazing comets coming from an outer reservoir) or to the existence of some braking mechanism preventing the grains from moving out.

Download/Website: `http://arxiv.org/abs/1211.7143`

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Planets near mean-motion resonances

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The Astrophysical Journal, submitted, arXiv:1211.5603

The multiple-planet systems discovered by the *Kepler* mission exhibit the following feature: planet pairs near first-order mean-motion resonances prefer orbits just outside the nominal resonance, while avoiding those just inside the resonance. We explore an extremely simple dynamical model for planet formation, in which planets grow in mass at a prescribed rate without orbital migration or dissipation. We develop an analytic version of this model for two-planet systems in two limiting cases: the planet mass grows quickly or slowly relative to the characteristic resonant libration time. In both cases the distribution of systems in period ratio develops a characteristic asymmetric peak-trough structure around the resonance, qualitatively similar to that observed in the *Kepler* sample. We verify this result with numerical integrations of the restricted three-body problem. We show that for the $3:2$ resonance, where the observed peak-trough structure is strongest, our simple model is consistent with the observations for a range of mean planet masses 20–$100 M_\oplus$. This mass range is higher than expected, by at least a factor of three, from the few *Kepler* planets with measured masses, but part of this discrepancy could be due to oversimplifications in the dynamical model or uncertainties in the planetary mass-radius relation.

Download/Website: `http://arxiv.org/abs/1211.5603`

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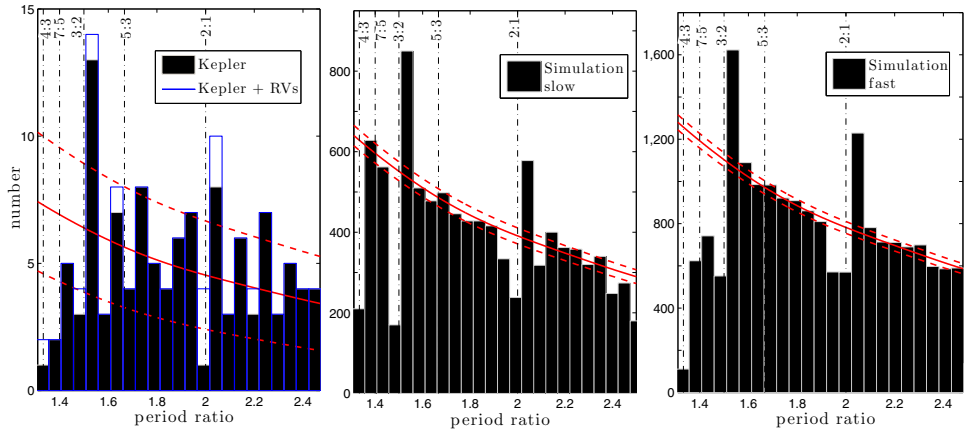

Figure 2: (Petrovich et al.) Number density of systems as a function of the period ratio. The left panel shows the *Kepler* sample (black histogram) and the *Kepler* sample plus the RV sample (blue line). The middle and right panels show the results of simulations for a slowly and rapidly growing planet, respectively. Result are shown for a final planet mass of 1 M_J, much bigger that the typical *Kepler* planet mass. The solid red lines indicate the initial distribution in the simulations (normalized by the total numbers of systems in each panel) and the red dashed lines its 1–σ error bands. The vertical dot-dashed lines show the positions of the first- and second-order resonances.

Subaru Imaging of Asymmetric Features in a Transitional Disk in Upper Scorpius

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The Astrophysical Journal, published (2012The Astrophysical Journal...760..L26)

We report high-resolution (0.07 arcsec) near-infrared polarized intensity images of the circumstellar disk around the star 2MASS J16042165-2130284 obtained with HiCIAO mounted on the Subaru 8.2 m telescope. We present our H-band data, which clearly exhibits a resolved, face-on disk with a large inner hole for the first time at infrared wavelengths. We detect the centrosymmetric polarization pattern in the circumstellar material as has been observed in other disks. Elliptical fitting gives the semimajor axis, semiminor axis, and position angle of the disk as 63 AU, 62 AU, and -14 °, respectively. The disk is asymmetric, with one dip located at position angles of $\sim$85°. Our observed disk size agrees well with a previous study of dust and CO emission at submm wavelength with SMA. Hence, the near-infrared light is interpreted as scattered light reflected from the inner edge of the disk. Our observations also detect an elongated arc (50 AU) extending over the disk inner hole. It emanates at the inner edge of the western side of the disk, extending inward first, then curving to the northeast. We discuss the possibility that the inner hole, the dip, and the arc that we have observed may be related to the existence of unseen bodies within the disk.

Download/Website: `http://iopscience.iop.org/2041-8205/760/2/L26/`

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Hα Activity of Old M Dwarfs: Stellar Cycles and Mean Activity Levels For 93 Low-Mass Stars in the Solar Neighborhood

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The Astrophysical Journal, in press (arXiv:1211.6091)

Through the McDonald Observatory M Dwarf Planet Search, we have acquired nearly 3,000 high-resolution spectra of 93 late-type (K5-M5) stars over more than a decade using HET/HRS. This sample provides a unique opportunity to investigate the occurrence of long-term stellar activity cycles for low-mass stars. In this paper, we examine the stellar activity of our targets as reflected in the Hα feature. We have identified periodic signals for 6 stars, with periods ranging from days to more than 10 years, and find long-term trends for 7 others. Stellar cycles with $P \geq 1$ year are present for at least 5% of our targets. Additionally, we present an analysis of the time-averaged activity levels of our sample, and search for correlations with other stellar properties. In particular, we find that more massive, earlier type (M0-M2) stars tend to be more active than later type dwarfs. Furthermore, high-metallicity stars tend to be more active at a given stellar mass. We also evaluate Hα variability as a tracer of activity-induced radial velocity (RV) variation. For the M dwarf GJ 1170, Hα variation reveals stellar activity patterns matching those seen in the RVs, mimicking the signal of a giant planet, and we find evidence that the previously identified stellar activity cycle of GJ 581 may be responsible for the recently retracted planet f (Vogt et al. 2012) in that system. In general, though, we find that Hα is not frequently correlated with RV at the precision (typically 6-7 m/s) of our measurements.

Download/Website: `http://arxiv.org/abs/1211.6091`

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Planet Signatures in Collisionally Active Debris Discs: scattered light images

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Astronomy & Astrophysics, in press (arXiv:1209.3969)

Planet perturbations have been often invoked as a potential explanation for many spatial structures that have been imaged in debris discs. So far this issue has been mostly investigated with pure N-body numerical models, which neglect the crucial effect collisions within the disc can have on the disc's response to dynamical perturbations. We numerically investigate how the coupled effect of collisions and radiation pressure can affect the formation and survival of radial and azimuthal structures in a disc perturbed by a planet. We consider two different set-ups: a planet embedded within an extended disc and a planet exterior to an inner debris ring. One important issue we want to address is under which conditions a planet's signature can be observable in a collisionally active disc. We use the DyCoSS code of Thebault(2012), which is designed to investigate the structure of perturbed debris discs at dynamical and collisional steady-state, and derive synthetic images of the system in scattered light. The planet's mass and orbit, as well as the disc's collisional activity (parameterized by its average vertical optical depth τ_0) are explored as free parameters. We find that collisions always significantly damp planet-induced spatial structures. For the case of an embedded planet, the planet's signature, mostly a density gap around its radial position, should remain detectable in head-on images if $M_{planet} \geq M_{Saturn}$. If the system is seen edge-on, however, inferring the presence of the planet is much more difficult, as only weak asymmetries remain in a collisionally active disc, although some planet-induced signatures might be observable under very favourable conditions. For the case of an inner ring and an external planet, planetary perturbations cannot prevent collision-produced small fragments from populating the regions beyond the ring. The radial luminosity profile exterior to the ring is in most cases close to the one it should have in the absence of the external planet. The most significant signature left by a Jovian planet on a circular orbit are precessing azimuthal structures that can be used to indirectly infer its presence. For a planet on an eccentric

orbit, we show that the ring becomes elliptic and that the well known pericentre glow effect is visible despite of collisions and radiation pressure, but that detecting such features in observed discs is not an unambiguous indicator of the presence of an outer planet.

Download/Website: `http://lesia.obspm.fr/perso/philippe-thebault/planpapph.pdf`

Contact: `philippe.thebault@obspm.fr`

The planet search programme at the ESO CES and HARPS. IV. The search for Jupiter analogues around solar-like stars

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Astronomy & Astrophysics, in press (arXiv:1211.7263)

In 1992 we began a precision radial velocity survey for planets around solar-like stars with the Coudé Echelle Spectrograph and the Long Camera (CES LC) at the 1.4 m telescope in La Silla (Chile) resulting in the discovery of the planet ι Hor b. We have continued the survey with the upgraded CES Very Long Camera (VLC) and the HARPS spectrographs, both at the 3.6 m telescope, until 2007. In this paper we present additional radial velocities for 31 stars of the original sample with higher precision. The observations cover a time span of up to 15 years and permit a search for Jupiter analogues. The survey was carried out with three different instruments/instrument configurations using the iodine absorption cell and the ThAr methods for wavelength calibration. We combine the data sets and perform a joint analysis for variability, trends, and periodicities. We compute Keplerian orbits for companions and detection limits in case of non-detections. Moreover, the HARPS radial velocities are analysed for correlations with activity indicators (CaII H&K and cross-correlation function shape). We achieve a long-term RV precision of 15 m/s (CES+LC, 1992–1998), 9 m/s (CES+VLC, 1999–2006), and 2.8 m/s (HARPS, 2003–2009, including archive data), respectively. This enables us to confirm the known planetary signals in ι Hor and HR 506 as well as the three known planets around HR 3259. A steady RV trend for ϵ Ind A can be explained by a planetary companion and calls for direct imaging campaigns. On the other hand, we find previously reported trends to be smaller for β Hyi and not present for α Men. The candidate planet ϵ Eri b was not detected despite our better precision. Also the planet announced for HR 4523 cannot be confirmed. Long-term trends in several of our stars are compatible with known stellar companions. We provide a spectroscopic orbital solution for the binary HR 2400 and refined solutions for the planets around HR 506 and ι Hor. For some other stars the variations could be attributed to stellar activity, as e.g. the magnetic cycle in the case of HR 8323. The occurrence of two Jupiter-mass planets in our sample is in line with the estimate of 10% for the frequency of giant planets with periods smaller than 10 yr around solar-like stars. We have not detected a Jupiter analogue, while the detections limits for circular orbits indicate at 5 AU a sensitivity for minimum mass of at least $1 M_{\rm Jup}$ ($2 M_{\rm Jup}$) for 13% (61%) of the stars.

Download/Website: `http://arxiv.org/abs/1211.7263`

Contact: `zechmeister@astro.physik.uni-goettingen.de`

3 Conference announcements

2013 Sagan Summer Workshop: Imaging Planets and Disks

C. Brinkworth
NASA Exoplanet Science Institute, California Institute of Technology, Pasadena, CA, USA

Pasadena, CA, July 29-August 2, 2013

The NASA Exoplanet Science Institute will host the 2013 Sagan Exoplanet Summer Workshop on "Imaging Planets and Disks". The workshop will take place on the Caltech campus July 29 - August 2, 2013. The workshop is intended for graduate students and postdocs however all interested parties are welcome to attend. Registration and the application period for limited financial support to attend will be available in early February 2013.

The 2013 workshop will explore current techniques and technology used to detect exoplanets and debris disks, as well as the underlying science driving the modeling of exoplanetary atmospheres and disk structure. A number of ground-based surveys are presently underway using advanced coronagraphs and Extreme Adaptive Optics on 5-10 m telescopes while new algorithms are being used to dig deeper in space-based datasets. Leaders in the field will summarize the current state of the art in science, hardware, and software. Prospects for future space instruments will also be discussed. Attendees will participate in hands-on exercises to gain experience working with imaging data, astrophysical models, and instrument design. Attendees will also have the opportunity to present their own work through short presentations (research POPs) and posters.

Important Dates

- February 1: On-line Registration available and Financial Support Application period open
- March 1: Financial Support applications and supporting letter of recommendation due
- March 25: Financial Support decisions announced via email
- April 1: POP/Poster submission page on-line
- June 1: Early on-line registration ends
- June 28: POP/Poster Submission deadline
- July 12: On-line registration closed and Hotel Registration deadline to be eligible for group rate
- July 12: Final Agenda posted
- July 28: Sagan Exoplanet Summer Workshop Opening Reception
- July 29-Aug 2: 2013 Sagan Exoplanet Summer Workshop

Download/Website: `http://nexsci.caltech.edu/workshop/2013`
Contact: `sagan_workshop@ipac.caltech.edu`

NASA Exoplanet Exploration Program Analysis Group Meeting 7

Stephen Unwin
Jet Propulsion Laboratory 321-100, Pasadena CA 91109

At the AAS Meeting, Long Beach, California, January 5-6, 2013

NASA's Exoplanet Exploration Program Analysis Group (ExoPAG) will hold its seventh meeting on Saturday-Sunday, January 5-6, 2013, just prior to the 221st AAS meeting in Long Beach, CA. ExoPAG meetings are open to the entire scientific community, and offer an opportunity to participate in discussions of scientific and technical issues in exoplanet exploration, and to provide input into NASA's Exoplanet Exploration Program (ExEP). All interested members of the astronomical and planetary science communities are invited to attend and participate.

ExoPAG-7 will continue to focus on expanding the inclusiveness of NASA's Exoplanet Exploration Program to the wider exoplanet community. In particular, the ExoPAG is soliciting input on novel ways in which NASA might facilitate exoplanet research over the next few years.

Suggestions can be sent to Prof. Scott Gaudi, ExoPAG Chair (gaudi@astronomy.ohio-state.edu), and/or Dr. Douglas Hudgins, ExoPAG Executive Secretary (Douglas.M.Hudgins@nasa.gov). News and information about NASA's ExoPAG and the ExoPAG-7 meeting can be found on the ExoPAG web site.

Download/Website: `http://exep.jpl.nasa.gov/exopag`

Contact: `stephen.c.unwin@jpl.nasa.gov`

IAU Symposium 299: Exploring the Formation and Evolution of Planetary Systems

Brenda Matthews
[1] National Research Council of Canada

Victoria, BC, Canada, 2-7 June 2013

Dear Colleagues,

This is a short reminder that Friday, 7 December 2012 is the deadline for both early registration and submission of requests for IAU Support Grants for IAU Symposium 299: Exploring the Formation and Evolution of Planetary Systems, to be held from 2-7 June 2013 in Victoria, BC, Canada.

All information about registration and support grants can be found on the conference website: www.iaus299.org.

best wishes,
Brenda Matthews
(for the LOC/SOC)

Download/Website: `http://www.iaus299.org`

Contact: `iaus-299@di.utoronto.ca`

4 As seen on astro-ph

The following list contains all the entries relating to exoplanets that we spotted on astro-ph during November 2012. If you see any that we missed, please let us know and we'll include them in the next issue.

astro-ph/1211.0023: **On the formation and evolution of asteroid belts and their potential significance for life** by *Rebecca G. Martin, Mario Livio*

astro-ph/1211.0218: **A new analysis of the WASP-3 system: no evidence for an additional companion** by *M. Montalto et al.*

astro-ph/1211.0544: **M dwarf stars in the light of (future) exoplanet searches** by *B. Rojas-Ayala, et al.*

astro-ph/1211.0554: **A paucity of proto-hot Jupiters on super-eccentric orbits** by *Rebekah I. Dawson, Ruth A. Murray-Clay, John Asher Johnson*

astro-ph/1211.0577: **A search for transits of GJ 581e and characterization of the host star variability using MOST space telescope photometry** by *Diana Dragomir, et al.*

astro-ph/1211.0810: **WASP-52b, WASP-58b, WASP-59b, and WASP-60b: four new transiting close-in giant planets** by *G. Hebrard, et al.*

astro-ph/1211.0837: **Tides in rotating barotropic fluid bodies: the contribution of inertial waves and the role of internal structure** by *Gordon I.Ogilvie*

astro-ph/1211.0864: **Transits and starspots in the WASP-19 planetary system** by *Jeremy Tregloan-Reed, John Southworth, C. Tappert*

astro-ph/1211.0964: **2/1 resonant periodic orbits in three dimensional planetary systems** by *K. I. Antoniadou, G. Voyatzis*

astro-ph/1211.1013 : **On the Orbits of Companions to White Dwarfs** by *J. Nordhaus, D. S. Spiegel*

astro-ph/1211.1031: **KELT-3b: A Hot Jupiter Transiting a V=9.8 Late-F Star** by *Joshua Pepper et al.*

astro-ph/1211.1078: **Resonances Required: Dynamical Analysis of the 24 Sex and HD 200964 Planetary Systems** by *Robert A. Wittenmyer, Jonathan Horner, C.G. Tinney*

astro-ph/1211.1280: **Counting the number of planets around GJ 581. False positive rate of Bayesian signal detection methods** by *Mikko Tuomi, James S. Jenkins*

astro-ph/1211.1293: **Looking for the rainbow on exoplanets covered by liquid and icy water clouds** by *T. Karalidi, D. M. Stam, J. W. Hovenier*

astro-ph/1211.1311: **SOAP-T: A tool to study the light-curve and radial velocity of a system with a transiting planet and a rotating spotted star** by *M. Oshagh, et al.*

astro-ph/1211.1389: **A Search for Giant Planet Companions to T Tauri Stars** by *Christopher J. Crockett et al.*

astro-ph/1211.1617: **Habitable-zone super-Earth candidate in a six-planet system around the K2.5V star HD 40307** by *Mikko Tuomi, et al.*

astro-ph/1211.1673: **The Minimum-Mass Extrasolar Nebula: In-Situ Formation of Close-In Super-Earths** by *E. Chiang, G. Laughlin*

astro-ph/1211.1709: **Three Dimensional Radiative Hydrodynamical Simulations of the Highly Irradiated Short Period Exoplanet HD189733b** by *Ian Dobbs-Dixon, Eric Agol*

astro-ph/1211.1820: **Circum-planetary discs as bottlenecks for gas accretion onto giant planets** by *Guillaume Rivier, et al.*

astro-ph/1211.1971: **On the Survivability and Metamorphism of Tidally Disrupted Giant Planets: the Role of Dense Cores** by *Shang-Fei Liu, et al.*

astro-ph/1211.1972: **Exoplanets from the Arctic: The First Wide-Field Survey at 80 Degrees North** by *Nicholas M. Law, et al.*

astro-ph/1211.1984: **Flow of Planets Raises Short Period Fall Off** by *Stuart F. Taylor*

astro-ph/1211.2002: **Starspots and spin-orbit alignment for Kepler cool host stars** by *Roberto Sanchis-Ojeda, Josh N. Winn, Daniel C. Fabrycky*

astro-ph/1211.2054 : **Detection of an exoplanet around the evolved K giant HD 66141** by *B.-C. Lee, et al.*

astro-ph/1211.2095: **Gravoturbulent Planetesimal Formation: The Positive Effect of long-lived Zonal Flows** by *Karsten Dittrich, Hubert Klahr, Anders Johansen*

astro-ph/1211.2279: **Objects in Kepler's Mirror May be Larger Than They Appear: Bias and Selection Effects in Transiting Planet Surveys** by *Eric Gaidos, Andrew W. Mann*

astro-ph/1211.2453: **Extrasolar Refractory-Dominated Planetesimals: an Assessment** by *M. Jura, S. Xu*

astro-ph/1211.2626: **Comet-like mineralogy of olivine crystals in an extrasolar proto-Kuiper belt** by *B. L. de Vries, et al.*

astro-ph/1211.2812: **On the Habitable Zones of Circumbinary Planetary Systems** by *Stephen R. Kane, Natalie R. Hinkel*

astro-ph/1211.2996: **Chemical consequences of the C/O ratio on hot Jupiters: Examples from WASP-12b,CoRoT-2b, XO-1b, and HD 189733b** by *J. I. Moses, et al.*

astro-ph/1211.3045: **WASP-71b: a bloated hot Jupiter in an 2.9-day, prograde orbit around an evolved F8 star** by *A. M. S. Smith, et al.*

astro-ph/1211.3078: **Mean Motion Resonances in Exoplanet Systems: An Investigation Into Nodding Behavior** by *Jacob A. Ketchum, Fred C. Adams, Anthony M. Bloch*

astro-ph/1211.3284 : **Subaru Imaging of Asymmetric Features in a Transitional Disk in Upper Scorpius** by *S. Mayama, et al.*

astro-ph/1211.3310: **New analytical expressions of the Rossiter-McLaughlin effect adapted to different observation techniques** by *Gwenal Boué, et al.*

astro-ph/1211.3331: **Mass-radius relationships of rocky exoplanets** by *F. Sohl, F. W. Wagner, H. Rauer*

astro-ph/1211.3721: **Assembly of Protoplanetary Disks and Inclinations of Circumbinary Planets** by *Francois Foucart, Dong Lai*

astro-ph/1211.3744 : **Direct Imaging Discovery of a 'Super-Jupiter' Around the late B-Type Star Kappa And** by *J. Carson, et al.*

astro-ph/1211.3782: **MOA-2010-BLG-073L: An M-Dwarf with a Substellar Companion at the Planet/Brown Dwarf Boundary** by *R. A. Street, et al.*

astro-ph/1211.3956: **Assessment of Hill stability versus known chaos indicators: application to the dynamics of S-type extrasolar planets** by *S. Satyal, B. Quarles, T. C. Hinse*

astro-ph/1211.4028 : **Model-Independent Stellar and Planetary Masses from Multi-Transiting Exoplanetary Systems** by *Benjamin T. Montet, John Asher Johnson*

astro-ph/1211.4367: **Atmospheric constraints for the CO2 partial pressure on terrestrial planets near the outer edge of the habitable zone** by *Philip von Paris, et al.*

astro-ph/1211.4533: **Emerging Trends in a Period-Radius Distribution of Close-in Planets** by *C. Beauge, D. Nesvorny*

astro-ph/1211.4785 : **SOPHIE+: First results of an octagonal-section fiber for high-precision radial velocity measurements** by *F. Bouchy, et al.*

astro-ph/1211.4876: **Directed follow-up strategy of low-cadence photometric surveys in Search of Transiting Exoplanets - II. application to Gaia** by *Yifat Dzigan, Shay Zucker*

astro-ph/1211.4895: **Near-UV and optical observations of the transiting exoplanet TrES-3b** by *Jake D. Turner, et al.*

astro-ph/1211.4898: **A DEBRIS Disk Around The Planet Hosting M-star GJ581 Spatially Resolved with Herschel** by *J.-F. Lestrade, et al.*

astro-ph/1211.5148: **Millimeter Emission Structure in the first ALMA Image of the AU Mic Debris Disk** by *Meredith A. MacGregor, et al.*

astro-ph/1211.5356 : **Origin of apparent period variations in eclipsing post-common-envelope binaries** by *M. Zorotovic, M. R. Schreiber*

astro-ph/1211.5361: **Secondary eclipses in the CoRoT light curves: A homogeneous search based on Bayesian model selection** by *Hannu Parviainen, Hans Deeg, Juan Antonio Belmonte*

astro-ph/1211.5423: **Dynamics of Core Accretion** by *Andrew F. Nelson, Maximilian Ruffert*

astro-ph/1211.5439 : **Do have nanosatellites a role in detecting exoplanets?** by *Werner W. Weiss, Vera Maria Passegger, Jason Rowe*

astro-ph/1211.5581 : **Telescope Fabra ROA Montsec: a new robotic wide-field Baker-Nunn facility** by *O. Fors, et al.*

astro-ph/1211.5603: **Planets Near Mean-Motion Resonances** by *Cristobal Petrovich, Renu Malhotra, Scott Tremaine*

astro-ph/1211.6033: **WASP-77 Ab: A transiting hot Jupiter planet in a wide binary system** by *P.F.L. Maxted, et al.*

astro-ph/1211.6140 : **Very Low-mass Stellar and Substellar Companions to Solar-like Stars from Marvels III: A Short-Period Brown Dwarf Candidate Around An Active G0Iv Subgiant** by *Bo Ma et al.*

astro-ph/1211.6345: **Stellar irradiated discs and implications on migration of embedded planets I: equilibrium discs** by *Bertram Bitsch, et al.*

astro-ph/1211.6365: **AKARI/IRC 18 Micron Survey of Warm Debris Disks** by *Hideaki Fujiwara, et al.*

astro-ph/1211.6444: **The CORALIE survey for southern extrasolar planets XVII. New and updated long period and massive planets** by *M. Marmier, et al.*

astro-ph/1211.6467: **Habitable Planets Around White and Brown Dwarfs: The Perils of a Cooling Primary** by *Rory Barnes, Rene Heller*

astro-ph/1211.6481: **Parameters of Recent Transits of HAT-P-23b** by *Felipe G. Ramn-Fox, Pedro V. Sada*

astro-ph/1211.6550: **A study of the performance of the transit detection tool DST in space-based surveys. Application of the CoRoT pipeline to Kepler data** by *J. Cabrera, et al.*

astro-ph/1211.6743 : **ALMA observations of rho-Oph 102: grain growth and molecular gas in the disk around a young Brown Dwarf** by *L. Ricci, et al.*

astro-ph/1211.6747: **Decoupling Phase Variations in Multi-Planet Systems** by *Stephen R. Kane, Dawn M. Gelino*

astro-ph/1211.6803: **Terrestrial Planets Formation around Circumbinary Habitable Zone: Inward Migration in the Planetesimal Swarm** by *Yan-Xiang Gong, Ji-Lin Zhou, Ji-Wei Xie*

astro-ph/1211.6828: **APOSTLE: Eleven Transit Observations of TrES-3b** by *Praveen Kundurthy, et al.*

astro-ph/1211.7121: **A proposal for community driven and decentralized astronomical databases and the Open Exoplanet Catalogue** by *Hanno Rein*

astro-ph/1211.7263: **The planet search programme at the ESO CES and HARPS. IV. The search for Jupiter analogues around solar-like stars** by *M. Zechmeister et al.*