ExoPlanet News
An Electronic Newsletter

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1 Editorial

Welcome to the forty-seventh edition of ExoPlanet News. As usual, this month's edition contains plenty to read, including announcements for no less than six conferences and meetings in related areas.
Although our distribution list is now well over 1000 subscribers, and we get many requests to be added to the list each month, there must be many people working in the field that don't yet subscribe. Please encourage your colleagues to do so, and submit abstracts, so that the Newsletter can have as wide a coverage of our field as possible. The next issue will be due just before Easter, and we'll aim to send that out near the beginning of April. Please send anything relevant 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 & Glenn White
The Open University

2 Announcements

Large Binocular Telescope Interferometer Exozodi Key Science Team

Rafael Millan Gabet
NASA Exoplanet Science Institute, California Institute of Technology, Pasadena, CA, USA

NASA solicits proposals to become members of the Large Binocular Telescope Interferometer (LBTI) Exozodi Key Science Science Team (LBTI-ST). The LBTI-ST will work under the leadership of the LBTI Principal Investigator (Dr. Phil Hinz, University of Arizona) in order to most effectively execute the exo-zodi key science program. LBTI-ST members will participate in science deliberations, target selection, LBTI observations, data processing and analysis, follow-up observations, and publication in peer-reviewed journals.

Proposals from participants are due April 27 2012. Results of the selection will be announced in early June 2012.

Download/Website: `http://nexsci.caltech.edu/missions/LBTI/cfp_keysci.shtml`
Contact: `lbti_nexsci@ipac.caltech.edu`.

3 Abstracts of refereed papers

Deserts and pile-ups in the distribution of exoplanets due to photoevaporative disc clearing

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Monthly Notices of the Royal Astronomical Society (Letters), in press (arXiv:1202.5554)

We present models of giant planet migration in evolving protoplanetary discs. We show that disc clearing by EUV photoevaporation can have a strong effect on the distribution of giant planet semi-major axes. During disc clearing planet migration is slowed or accelerated in the region where photoevaporation opens a gap in the disc, resulting in "deserts" where few giant planets are found and corresponding "pile-ups" at smaller and larger radii. However, the precise locations and sizes of these features are strong functions of the efficiency of planetary accretion, and therefore also strongly dependent on planet mass. We suggest that photoevaporative disc clearing may be responsible for the pile-up of $\sim$Jupiter-mass planets at $\sim$ 1AU seen in exoplanet surveys, and show that observations of the distribution of exoplanet semi-major axes can be used to test models of both planet migration and disc clearing.

Download/Website: `http://arxiv.org/abs/1202.5554`
`http://www.astro.le.ac.uk/users/rda5/publications.html`
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Factors Affecting the Radii of Close-in Transiting Exoplanets

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Astronomy & Astrophysics, accepted (arxiv 1202.6199)

Context: The radius of an exoplanet may be affected by various factors, including irradiation received from the host star, the mass of the planet and its heavy element content. A significant number of transiting exoplanets have now been discovered for which the mass, radius, semi-major axis, host star metallicity and stellar effective temperature are known.
Aims: We use multivariate regression models to determine the power-law dependence of planetary radius on planetary equilibrium temperature T_{eq}, planetary mass M_p, stellar metallicity [Fe/H], orbital semi-major axis a, and tidal heating rate H_{tidal}, for 119 transiting planets in three distinct mass regimes.
Methods: We fit models initially to all 119 planets, resulting in fairly high scatter between fitted and observed radii, and subsequently to three subsets of these planets: Saturn-mass planets, Jupiter-mass planets, and high-mass planets. We find models for each subset that fit the observed planetary radii well and show the importance of the various environmental parameters on each subset.
Results: We determine that heating leads to larger planet radii, as expected, increasing mass leads to increased or decreased radii of low-mass ($< 0.5R_J$) and high-mass ($> 2.0R_J$) planets, respectively (with no mass effect on Jupiter-mass planets), and increased host-star metallicity leads to smaller planetary radii, indicating a relationship between host-star metallicity and planet heavy element content. For Saturn-mass planets, a good fit to the radii may be obtained from log(R_p/R_J) = -0.077 + 0.450 log(M_p/M_J) - 0.314 [Fe/H] + 0.671 log(a/AU) + 0.398 log(T_{eq}/K). The radii of Jupiter-mass planets may be fit by log(R_p/R_J) = -2.217 + 0.856 log(T_{eq}/K) + 0.291 log(a/AU). High-mass planets' radii are best fit by log(R_p/R_J) = -1.067 + 0.380 log(T_{eq}/K) - 0.093 log(M_p/M_J) - 0.057 [Fe/H] + 0.019 log($H_{tidal}/1 \times 10^{20}$). These equations produce a very good fit to the observed radii, with a mean absolute difference between fitted and observed radius of 0.11 R_J, compared to the mean reported uncertainty in observed radius of 0.07 R_J. A clear distinction is seen between the core-dominated Saturn-mass (0.1-0.5 M_J) planets, whose radii are determined almost exclusively by their mass and heavy element content, and the gaseous envelope-dominated Jupiter-mass (0.5-2.0 M_J) planets, whose radii increase strongly with irradiating flux, partially offset by a power-law dependence on orbital separation.

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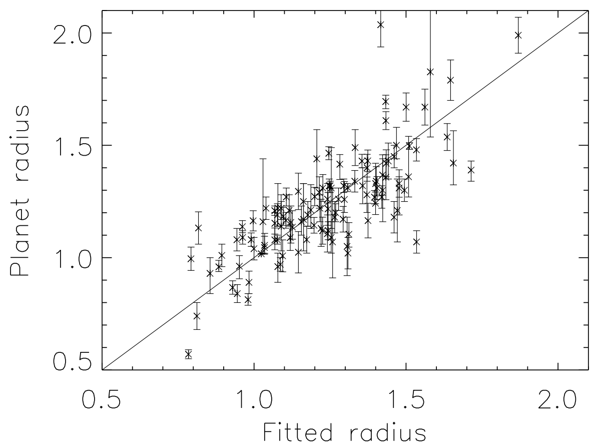

Figure 1: (Enoch et al.) Results of the radius calibration on 119 transiting exoplanets using the 3 equations given for each subset.

Can GJ 876 host four planets in resonance?

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Celest. Mech. Dyn. Astron., in press (arXiv: 1202.5865)

Prior to the detection of its outermost Uranus-mass object, it had been suggested that GJ 876 could host an Earth-sized planet in a 15-day orbit. Observation, however, did not support this idea, but instead revealed evidence for the existence of a larger body in a $\sim$125-day orbit, near a three-body resonance with the two giant planets of this system. In this paper, we present a detailed analysis of the dynamics of the four-planet system of GJ 876, and examine the possibility of the existence of other planetary objects interior to its outermost body. We have developed a numerical scheme that enables us to search the orbital parameter-space very effectively and, in a short time, identify regions where an object may be stable. We present details of this integration method and discuss its application to the GJ 876 four-planet system. The results of our initial analysis suggested possible stable orbits at regions exterior to the orbit of the outermost planet and also indicated that an island of stability may exist in and around the 15-day orbit. However, examining the long-term stability of an object in that region by direct integration revealed that the 15-day orbit becomes unstable and that the system of GJ 876 is most likely dynamically full. We present the results of our study and discuss their implications for the formation and final orbital architecture of this system.

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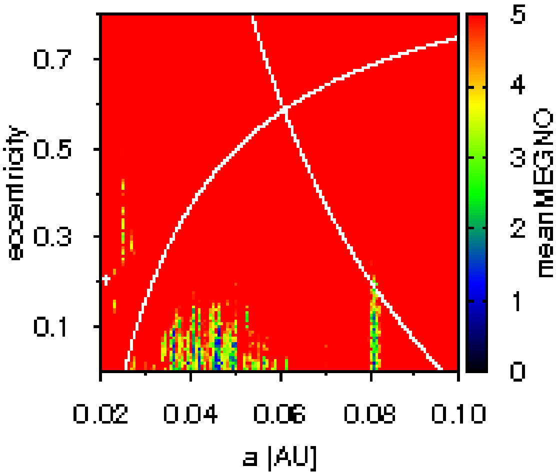

Figure 2: (Gerlach & Haghighipour) Graph of the orbital stability of test particles in the four-planet system of GJ 876. The initial orbital elements of the planets are taken from Rivera et al. (2010, Table 3). Simulations were carried out on a grid of 600 x 100. The color-coding represent the mean value of MEGNO where red corresponds to chaotic motions and black/blue denote stable regions. Integrations were done for 500 years using a step-size of $\tau = 0.05$ days. The white lines mark the boundary, above which collisions with planets b and d (crosses) are possible.

Limb darkening laws for two exoplanet host stars derived from 3D stellar model atmospheres

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Astronomy & Astrophysics, in press (arXiv: 1202.0548)

We compare limb darkening laws derived from 3D hydrodynamical model atmospheres and 1D hydrostatic `MARCS` models for the host stars of two well-studied transiting exoplanet systems, the late-type dwarfs HD 209458 and HD 189733. The surface brightness distribution of the stellar disks is calculated for a wide spectral range using 3D LTE spectrum formation and opacity sampling. We test our theoretical predictions using least-squares fits of model light curves to wavelength-integrated primary eclipses that were observed with the Hubble Space Telescope (HST). The limb darkening law derived from the 3D model of HD 209458 in the spectral region between 2900 Å and 5700 Å produces significantly better fits to the HST data, removing systematic residuals that were previously observed for model light curves based on 1D limb darkening predictions. This difference arises mainly from the shallower mean temperature structure of the 3D model, which is a consequence of the explicit simulation of stellar surface granulation where 1D models need to rely on simplified recipes. In the case of HD 189733, the model atmospheres produce practically equivalent limb darkening curves between 2900 Å and 5700 Å, partly due to obstruction by spectral lines, and the data are not sufficient to distinguish between the light curves. We also analyze HST observations between 5350 Å and 10500 Å for this star; the 3D model leads to a better fit compared to 1D limb darkening predictions.
The significant improvement of fit quality for the HD 209458 system demonstrates the higher degree of realism of 3D hydrodynamical models and the importance of surface granulation for the formation of the atmospheric radiation field of late-type stars. This result agrees well with recent investigations of limb darkening in the solar continuum and other observational tests of the 3D models. The case of HD 189733 is no contradiction as the model light curves are less sensitive to the temperature stratification of the stellar atmosphere and the observed data in the 2900 Å - 5700 Å region are not sufficient to distinguish more clearly between the 3D and 1D limb darkening predictions.

Download/Website: `http://arxiv.org/abs/1202.0548`

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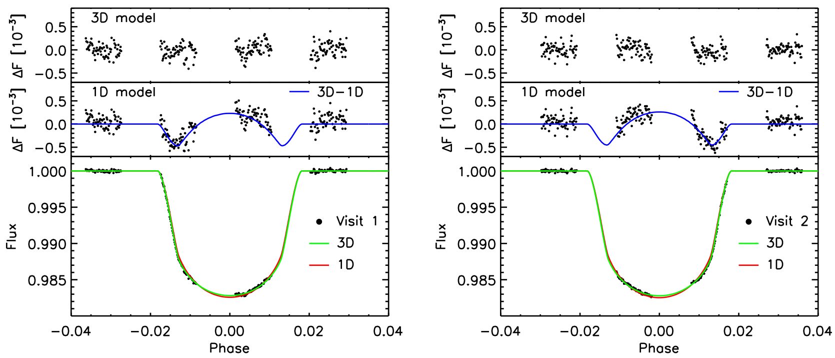

Figure 3: (Hayek et al.) Transit light curve fits for two visits of HD 209458b (dots in the lower panels of each plot), integrated over the wavelength range between 2900 Å and 5700 Å with limb darkening coefficients derived from the 3D model (green lines) and the 1D `MARCS` model (red lines). The residuals of the 3D fits and the 1D fits are shown in the upper panels and center panels in each plot, the blue lines show the deviation between the 3D and 1D model light curves.

Jupiter - Friend or Foe? IV: The influence of orbital eccentricity and inclination

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International Journal of Astrobiology, in press (http://arxiv.org/pdf/1111.3144.pdf)

For many years, it was assumed that Jupiter prevented the Earth from being subject to a punishing impact regime that would greatly hinder the development of life. Here, we present the 4th in a series of studies investigating this hypothesis. Previously, we examined the effect of Jupiter's mass on the impact rate experienced by Earth. Here, we extend that approach to consider the influence of Jupiter's orbital eccentricity and inclination on the impact rate. We first consider scenarios in which Jupiter's orbital eccentricity was somewhat higher and somewhat lower than that in our Solar System. We find that Jupiter's orbital eccentricity plays a moderate role in determining the impact flux at Earth, with more eccentric orbits resulting in a higher impact rate of asteroids than for more circular orbits. This is particularly pronounced at high "Jupiter" masses. For short-period comets, the same effect is clearly apparent, albeit to a lesser degree. The flux of short-period comets impacting the Earth is slightly higher for more eccentric Jovian orbits. We also consider scenarios in which Jupiter's orbital inclination was greater than that in our Solar System. Increasing Jupiter's orbital inclination greatly increased the flux of asteroidal impactors. However, at the highest tested inclination, the disruption to the Asteroid belt was so great that the belt would be entirely depleted after an astronomically short period of time. In such a system, the impact flux from asteroid bodies would therefore be very low, after an initial period of intense bombardment. By contrast, the influence of Jovian inclination on impacts from short-period comets was very small. A slight reduction in the impact flux was noted for the moderate and high inclination scenarios considered in this work - the results for inclinations of five and twenty-five degrees were essentially identical.

Download/Website: `http://arxiv.org/pdf/1111.3144.pdf`

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The McDonald Observatory Planet Search: New Long-Period Giant Planets, and Two Interacting Jupiters in the HD 155358 System

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Astrophysical Journal, in press (http://arxiv.org/pdf/1202.0265.pdf)

We present high-precision radial velocity (RV) observations of four solar-type (F7- G5) stars HD 79498, HD 155358, HD 197037, and HD 220773 taken as part of the McDonald Observatory Planet Search Program. For each of these stars, we see evidence of Keplerian motion caused by the presence of one or more gas giant plan- ets in long-period orbits. We derive orbital parameters for each system, and note the properties (composition, activity, etc.) of the host stars. While we have previously announced the two-gas-giant HD 155358 system, we now report a shorter period for planet c. This new period is consistent with the planets being trapped in mutual 2:1 mean-motion resonance. We therefore perform an in-depth stability analysis, placing additional constraints on the orbital parameters of the planets. These results demon- strate the excellent long-term RV stability of the spectrometers on both the Harlan J. Smith 2.7 m telescope and the Hobby-Eberly telescope.

Download/Website: `http://arxiv.org/pdf/1202.0265.pdf`

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Quantifying Jupiter's influence on the Earth's impact flux: Implications for planetary habitability

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Peer-reviewed conference proceedings of the 11th annual Australian Space Science Conference, in press (http://arxiv.org/pdf/1202.1314.pdf)

It has long been thought that the presence of a giant planet is a pre-requisite for the development of life on potentially habitable planets. Without Jupiter, it was argued, the Earth would have been subject to a punishing impact regime, which would have significantly retarded or outright prevented the development of life on our planet. Although this idea is widely embraced, little research has previously been carried out to support it. Here, we present the results of several suites of dynamical integrations used to model the influence of Jupiters mass and orbit on the impact rate that would be experienced by the Earth. We find that, far from being a simple shield, Jupiters role in determining the terrestrial impact flux is significantly more complicated than previously thought. Far from being a simple friend, such giant planets are perhaps more likely to imperil the development of life on otherwise habitable planets.

Download/Website: `http://arxiv.org/pdf/1202.1314.pdf`

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The Curious Case of HU Aquarii - Dynamically Testing Proposed Planetary Systems

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Peer-reviewed conference proceedings of the 11th annual Australian Space Science Conference, in press (http://arxiv.org/pdf/1201.5730.pdf)

In early 2011, the discovery of two planets moving on surprisingly extreme orbits around the eclipsing polar cataclysmic variable system HU Aquraii was announced based on variations in the timing of mutual eclipses between the two central stars. We perform a detailed dynamical analysis of the stability of the exoplanet system as proposed in that work, revealing that it is simply dynamically unfeasible. We then apply the latest rigorous methods used by the Anglo-Australian Planet Search to analyse radial velocity data to re-examine the data used to make the initial claim. Using that data, we arrive at a significantly different orbital solution for the proposed planets, which we then show through dynamical analysis to be equally unfeasible. Finally, we discuss the need for caution in linking eclipse-timing data for cataclysmic variables to the presence of planets, and suggest a more likely explanation for the observed signal.

Download/Website: `http://arxiv.org/pdf/1201.5730.pdf`

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Temperature-Pressure Profile of the hot Jupiter HD 189733b from HST Sodium Observations: Detection of Upper Atmospheric Heating

C.M. Huitson[1], D.K. Sing[1], A. Vidal-Madjar[2], G.E. Ballester[3], A. Lecavelier des Etangs[2], J.-M. Désert[4], F. Pont[1]

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Monthly Notices of the Royal Astronomical Society, in press (arXiv:1202.4721)

We present transmission spectra of the hot Jupiter HD 189733b taken with the Space Telescope Imaging Spectrograph aboard *HST*. The spectra cover the wavelength range 5808 - 6380 Å with a resolving power of $R = 5000$. We detect absorption from the Na I doublet within the exoplanet's atmosphere at the 9σ confidence level within a 5 Å band (absorption depth 0.09 ± 0.01 %) and use the data to measure the doublet's spectral absorption profile. We detect only the narrow cores of the doublet. The narrowness of the feature could be due to an obscuring high-altitude haze of an unknown composition or a significantly sub-solar Na I abundance hiding the line wings beneath a H_2 Rayleigh signature. These observations are consistent with previous broad-band spectroscopy from ACS and STIS, where a featureless spectrum was seen. We also investigate the effects of starspots on the Na I line profile, finding that their impact is minimal and within errors in the sodium feature.

We compare the spectral absorption profile over 5.5 scale heights with model spectral absorption profiles and constrain the temperature at different atmospheric regions, allowing us to construct a vertical temperature profile. We identify two temperature regimes; a 1280 ± 240 K region derived from the Na I doublet line wings corresponding to altitudes below ~ 500 km, and a 2800 ± 400 K region derived from the Na I doublet line cores corresponding to altitudes from $\sim 500 - 4000$ km. The zero altitude is defined by the white-light radius of $R_\mathrm{P}/R_\star = 0.15628 \pm 0.00009$. The temperature rises with altitude, which is likely evidence of a thermosphere.

The absolute pressure scale depends on the species responsible for the Rayleigh signature and its abundance. We discuss a plausible scenario for this species, a high-altitude silicate haze, and the atmospheric temperature-pressure profile that results. In this case, the high altitude temperature rise for HD 189733b occurs at pressures of 10^{-5}-10^{-8} bar.

Download/Website: `http://adsabs.harvard.edu/abs/2012arXiv1202.4721H`

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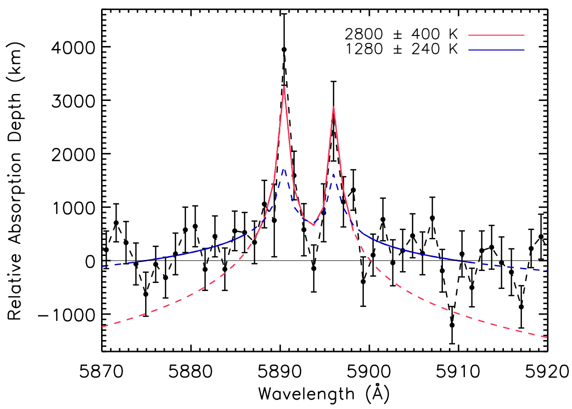

Figure 4: (Huitson et al.) The spectrum around the sodium doublet overplotted with isothermal model fits, with the models binned to the instrument resolution. Altitudes are excess absorption relative to the continuum defined by Rayleigh scattering. The blue line is the fit to the 'line wings' (5874-5886 Å and 5899-5912 Å), which probes atmospheric regions less than $\sim$ 500 km above the reference altitude. The best fitting temperature is 1280 ± 240 K, a temperature that is similar to the temperature obtained by fitting the broad-band continuum absorption with Rayleigh scattering at the same wavelength range. The red line is the fit to the 'line cores', at 5887-5898 Å. This wavelength region probes higher atmospheric regions, greater than $\sim$ 500 km above the continuum. The temperature is found to increase to 2800 ± 500 K.

An icy Kuiper-Belt around the young solar-type star HD 181327

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Astronomy & Astrophysics, in press (arXiv:1112.3398)

HD 181327 is a young Main Sequence F5/F6 V star belonging to the β Pictoris moving group (age $\sim$ 12 Myr). It harbors an optically thin belt of circumstellar material at radius $\sim$90 AU, presumed to result from collisions in a population of unseen planetesimals.
We aim to study the dust properties in the belt in details, and to constrain the gas-to-dust ratio.
We obtained far-infrared photometric observations of HD 181327 with the PACS instrument onboard the Herschel Space Observatory, complemented by 3.2 mm observations carried with the ATCA array. The geometry of the belt is constrained with newly reduced HST/NICMOS scattered light images that allow the degeneracy between the disk geometry and the dust properties to be broken. We use the radiative transfer code GRaTer to compute a large grid of models, and we identify the grain models that best reproduce the Spectral Energy Distribution (SED) through a Bayesian analysis. We attempt to detect the oxygen and ionized carbon fine-structure lines with Herschel/PACS spectroscopy, providing observables to our photochemical code ProDiMo.
The HST observations confirm that the dust is confined in a narrow belt. The continuum is detected with Herschel/PACS completing nicely the SED in the far-infrared. The disk is marginally resolved with both PACS and ATCA. A medium integration of the gas spectral lines only provides upper limits on the [OI] and [CII] line fluxes. We show that the HD 181327 dust disk consists of micron-sized grains of porous amorphous silicates and carbonaceous material surrounded by an important layer of ice, for a total dust mass of $\sim 0.05 M_\oplus$ (in grains up to 1 mm). We discuss evidences that the grains consists of fluffy aggregates. The upper limits on the gas atomic lines do not provide unambiguous constraints: only if the PAH abundance is high, the gas mass must be lower than $\sim 17 M_\oplus$. Despite the weak constraints on the gas disk, the age of HD 181327 and the properties of the dust disk suggest that it has passed the stage of gaseous planets formation. The dust reveals a population of icy planetesimals, similar to the primitive Edgeworth-Kuiper Belt, that may be a source for the future delivery of water and volatiles onto forming terrestrial planets.

Download/Website: `http://arxiv.org/abs/1112.3398`

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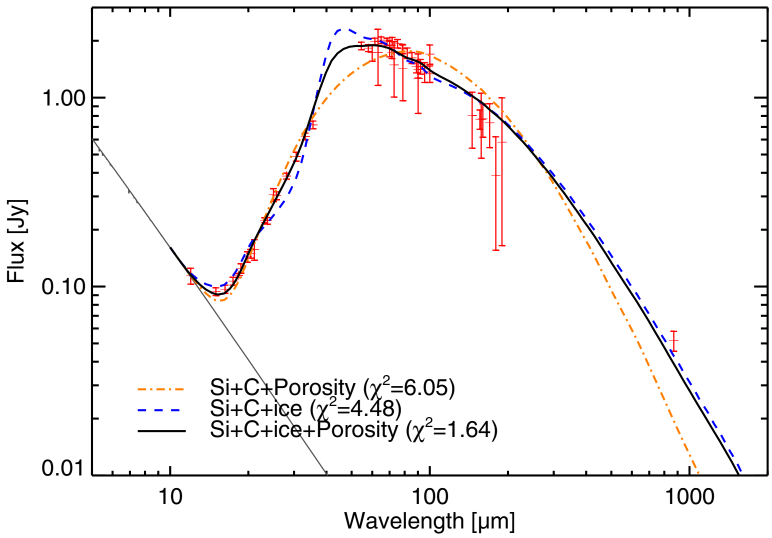

Figure 5: (Lebreton et al.) Spectral Energy Distribution of HD 181327. Red crosses: photometric data from several instruments. Solid grey line: synthetic stellar spectrum. The best fit solutions from a grid of 1.1 million dust disk radiative transfer models are displayed for several grain compositions.

Using *Kepler* transit observations to measure stellar spot belt migration rates

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Monthly Notices of the Royal Astronomical Society Letters, in press: arXiv:1202.3785

Planetary transits provide a unique opportunity to investigate the surface distributions of star spots. Our aim is to determine if, with continuous observation (such as the data that will be provided by the *Kepler* mission), we can in addition measure the rate of drift of the spot belts. We begin by simulating magnetic cycles suitable for the Sun and more active stars, incorporating both flux emergence and surface transport. This provides the radial magnetic field distribution on the stellar surface as a function of time. We then model the transit of a planet whose orbital axis is misaligned with the stellar rotation axis. Such a planet could occult spots at a range of latitudes. This allows us to complete the forward modelling of the shape of the transit lightcurve. We then attempt the inverse problem of recovering spot locations from the transit alone. From this we determine if transit lightcurves can be used to measure spot belt locations as a function of time. We find that for low-activity stars such as the Sun, the 3.5 year *Kepler* window is insufficient to determine this drift rate. For more active stars, it may be difficult to distinguish subtle differences in the nature of flux emergence, such as the degree of overlap of the "butterfly wings". The rate and direction of drift of the spot belts can however be determined for these stars. This would provide a critical test of dynamo theory.

Download/Website: `http://arxiv.org/abs/1202.3785`

Contact: `joe.llama@st-andrews.ac.uk`

Metallicity of solar-type stars with debris discs and planets

J. Maldonado[1], C. Eiroa[1], E. Villaver[1], B. Montesinos[2], A. Mora[3]

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[2] Centro de Astrobiología (INTA-CSIC), LAEFF Campus, European Space Astronomy Center (ESAC), P.O. Box 78, E-28691 Villanueva de la Cañada, Madrid, Spain
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Accepted for publication by Astronomy & Astrophysics, in press, arXiv1202.5884

Context: Around 16% of the solar-like stars in our neighbourhood show IR-excesses due to dusty debris discs and a fraction of them are known to host planets. Determining whether these stars follow any special trend in their properties is important to understand debris disc and planet formation.
Aims: We aim to determine in a homogeneous way the metallicity of a sample of stars with known debris discs and planets. We attempt to identify trends related to debris discs and planets around solar-type stars.
Methods: Our analysis includes the calculation of the fundamental stellar parameters $T_{\rm eff}$, $\log g$, microturbulent velocity, and metallicity by applying the iron ionisation equilibrium conditions to several isolated Fe I and Fe II lines. High-resolution échelle spectra ($R \sim 57000$) from 2-3 meter class telescopes are used. Our derived metallicities are compared with other results in the literature, which finally allows us to extend the stellar samples in a consistent way.
Results: The metallicity distributions of the different stellar samples suggest that there is a transition toward higher metallicities from stars with neither debris discs nor planets to stars hosting giant planets. Stars with debris discs and stars with neither debris nor planets follow a similar metallicity distribution, although the distribution of the first ones might be shifted towards higher metallicities. Stars with debris discs and planets have the same metallicity behaviour as stars hosting planets, irrespective of whether the planets are low-mass or gas giants. In the case of debris discs and giant planets, the planets are usually cool, - semimajor axis larger than 0.1 AU (20 out of 22 planets), even $\approx 65\%$ have semimajor axis larger than 0.5 AU. The data also suggest that stars with debris discs and cool giant planets tend to have a low dust luminosity, and are among the less luminous debris discs known. We also find evidence of an anticorrelation between the luminosity of the dust and the planet eccentricity.
Conclusions: Our data show that the presence of planets, not the debris disc, correlates with the stellar metallicity. The results confirm that core-accretion models represent suitable scenarios for debris disc and planet formation. These conclusions are based on a number of stars with discs and planets considerably larger than in previous works, in particular stars hosting low-mass planets and debris discs. Dynamical instabilities produced by eccentric giant planets could explain the suggested dust luminosity trends observed for stars with debris discs and planets.

Download/Website: `http://arxiv.org/abs/1202.5884`

Contact: `jesus.maldonado@uam.es`

Resolving the terrestrial planet forming regions of HD113766 and HD172555 with MIDI

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[3] Cavendish Laboratory, University of Cambridge, JJ Thomson Avenue, Cambridge, CB3 0HE

Monthly Notices of the Royal Astronomical Society, in press

We present new MIDI interferometric and VISIR spectroscopic observations of HD113766 and HD172555. Additionally we present VISIR 11μm and 18μm imaging observations of HD113766. These sources represent the youngest (16Myr and 12Myr old respectively) debris disc hosts with emission on $\ll$10AU scales. We find that the disc of HD113766 is partially resolved on baselines of 42–102m, with variations in resolution with baseline length consistent with a Gaussian model for the disc with FWHM of 1.2–1.6AU (9–12mas). This is consistent with the

VISIR observations which place an upper limit of 0.″14 (17AU) on the emission, with no evidence for extended emission at larger distances. For HD172555 the MIDI observations are consistent with complete resolution of the disc emission on all baselines of lengths 56–93m, putting the dust at a distance of >1AU (>35mas). When combined with limits from TReCS imaging the dust at $\sim$10μm is constrained to lie somewhere in the region 1–8AU. Observations at $\sim$18μm reveal extended disc emission which could originate from the outer edge of a broad disc, the inner parts of which are also detected but not resolved at 10μm, or from a spatially distinct component. These observations provide the most accurate direct measurements of the location of dust at 1–8AU that might originate from the collisions expected during terrestrial planet formation. These observations provide valuable constraints for models of the composition of discs at this epoch and provide a foundation for future studies to examine in more detail the morphology of debris discs.

Download/Website: `http://arxiv.org/abs/1202.5487`

Contact: `rs@astro.keele.ac.uk`

An improved model of the Edgeworth-Kuiper debris disk

Ch. Vitense, A. V. Krivov, H. Kobayashi & T. Löhne

Astrophysikalisches Institut, Friedrich-Schiller-Universität Jena, Schillergäßchen 2–3, 07745 Jena, Germany

Astronomy & Astrophysics, in press

In contrast to all other debris disks, where the dust can be seen via an infrared excess over the stellar photosphere, the dust emission of the Edgeworth-Kuiper belt (EKB) eludes remote detection because of the strong foreground emission of the zodiacal cloud. We accessed the expected EKB dust disk properties by modeling. We treated the debiased population of the known transneptunian objects (TNOs) as parent bodies and generated the dust with our collisional code. The resulting dust distributions were modified to take into account the influence of gravitational scattering and resonance trapping by planets on migrating dust grains as well as the effect of sublimation. A difficulty with the modeling is that the amount and distribution of dust are largely determined by sub-kilometer-sized bodies. These are directly unobservable, and their properties cannot be accessed by collisional modeling, because objects larger than $(10\ldots60)$ m in the present-day EKB are not in a collisional equilibrium. To place additional constraints, we used in-situ measurements of the New Horizons spacecraft within 20 AU. We show that to sustain a dust disk consistent with these measurements, the TNO population *has* to have a break in the size distribution at $s \leq 70\,\mathrm{km}$. However, even this still leaves us with several models that all correctly reproduce nearly constant dust impact rates in the region of giant planet orbits and do not violate the constraints from the non-detection of the EKB dust thermal emission by the COBE spacecraft. The modeled EKB dust disks, which conform to the observational constraints, can either be transport-dominated or intermediate between the transport-dominated and collision-dominated regime. The in-plane optical depth of such disks is $\tau_{\|}(r > 10\,\mathrm{AU}) \sim 10^{-6}$ and their fractional luminosity is $f_d \sim 10^{-7}$. Planets and sublimation are found to have little effect on dust impact fluxes and dust thermal emission. The spectral energy distribution of an EKB analog as seen from 10 pc distance peaks at wavelengths of $(40\ldots50)\,\mu$m at $F \approx 0.5\,$mJy, which is less than 1% of the photospheric flux at those wavelengths. Therefore, EKB analogs cannot be detected with present-day instruments such as Herschel/PACS.

Download/Website: `http://arxiv.org/abs/1202.2257`

Contact: `vitense@astro.uni-jena.de`

A massive exoplanet candidate around KOI-13: Independent confirmation by ellipsoidal variations

D. Mislis & S. Hodgkin
Institute of Astronomy, Madingley Road, Cambridge CB3 0HA, UK

Monthly Notices of the Royal Astronomical Society, Accepted

We present an analysis of the KOI-13.01 candidate exoplanet system included in the September 2011 Kepler data release. The host star is a known and relatively bright (m_{KP} = 9.95) visual binary with a separation significantly smaller (0.8 arcsec) than the size of a Kepler pixel (4 arcsec per pixel). The Kepler light curve shows both primary and secondary eclipses, as well as significant out-of-eclipse light curve variations. We confirm that the transit occurs round the brighter of the two stars. We model the relative contributions from (i) thermal emission from the companion, (ii) planetary reflected light, (iii) doppler beaming, and (iv) ellipsoidal variations in the host-star arising from the tidal distortion of the host star by its companion. Our analysis, based on the light curve alone, enables us to constrain the mass of the KOI-13.01 companion to be M_{C} = 8.3 $\pm$ 1.25M_{J} and thus demonstrates that the transiting companion is a planet (rather than a brown dwarf which was recently proposed by Szabò). The high temperature of the host star (Spectral Type A5-7V, T_{eff} = 85118020 K), combined with the proximity of its companion KOI-13.01, may make it one of the hottest exoplanets known, with a detectable thermal contribution to the light curve even in the Kepler optical passband. However, the single passband of the Kepler light curve does not enable us to unambiguously distinguish between the thermal and reflected components of the planetary emission. Infrared observations may help to break the degeneracy, while radial velocity follow-up with $\sigma \sim$ 100 m s^1 precision should confirm the mass of the planet.

Download/Website: `http://adsabs.harvard.edu/abs/2012arXiv1202.1760M`

Contact: `misldim@ast.cam.ac.uk`

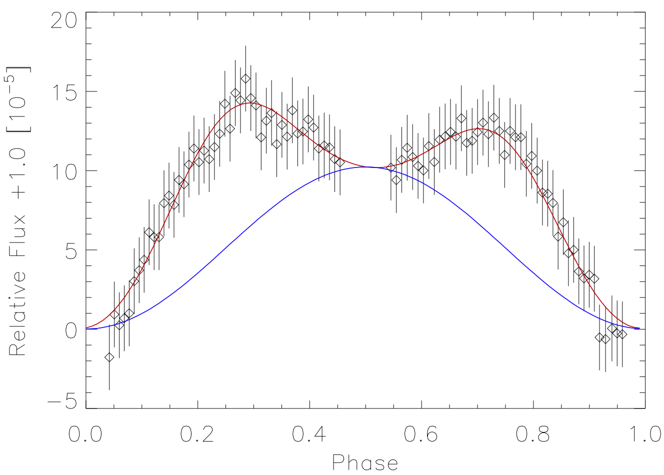

Figure 6: (Mislis & Hodgkin) Phase-folded light curve and the best-fitting model, including all four components (Thermal, reflected, ellipsoidal variations, Doppler beaming). The blue solid line refers to the Thermal + Reflected flux component. The additional flux from ellipsoidal variations at phase a = 0.5 is zero, that's why the total flux at the same phase comes only from the Thermal + Reflected flux component (ignoring the secondary eclipse).

The KELT-South Telescope

J. Pepper[1], *R. B. Kuhn*[2,3], *R. Siverd*[1], *D. James*[4], *K. Stassun*[1,5]

[1] Department of Physics & Astronomy, Vanderbilt University, 6301 Stevenson Center, Nashville, TN 37235
[2] South African Astronomical Observatory, P.O. Box 9, Observatory 7935, Cape Town, South Africa
[3] Astrophysics, Cosmology and Gravity Centre, Department of Astronomy, University of Cape Town, South Africa
[4] Cerro Tololo InterAmerican Observatory, Colina El Pino, S/N, La Serena, Chile
[5] Department of Physics, Fisk University, 1000 17th Ave. N., Nashville, TN 37208

Publications of the Astronomical Society of the Pacific, accepted

The Kilodegree Extremely Little Telescope (KELT) project is a survey for new transiting planets around bright stars. KELT-South is a small-aperture, wide-field automated telescope located at Sutherland, South Africa. The telescope surveys a set of $26° \times 26°$ fields around the southern sky, and targets stars in the range of $8 < V < 10$ mag, searching for transits by Hot Jupiters. This paper describes the KELT-South system hardware and software and discusses the quality of the observations. We show that KELT-South is able to achieve the necessary photometric precision to detect transits of Hot Jupiters around solar-type main-sequence stars.

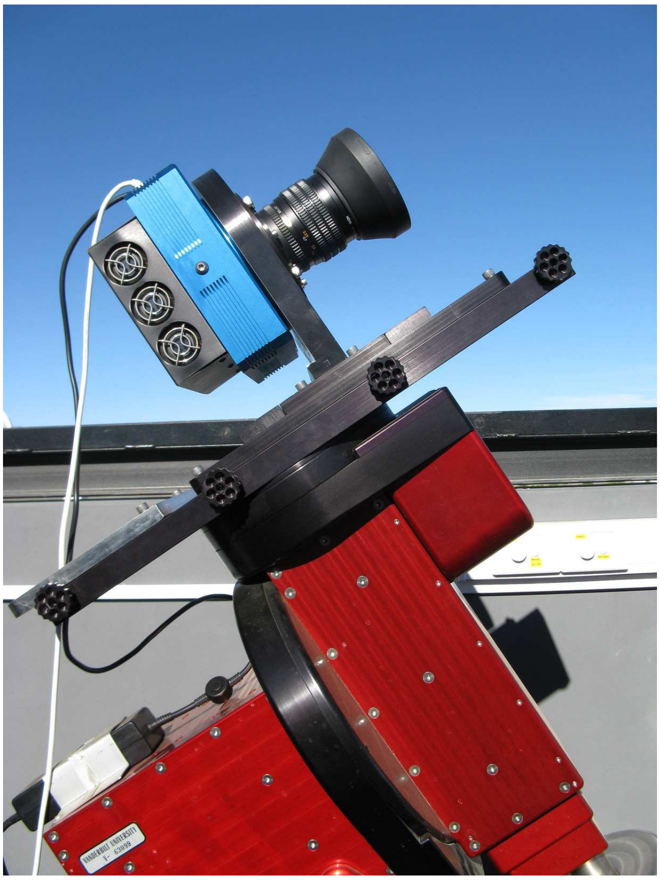

Figure 7: (Pepper et al.) The robotic KELT-South telescope at Sutherland, South Africa.

4 Jobs and Positions

Postdoctoral Position in Planet Formation

Professor Matthew R. Bate
Astrophysics Group, School of Physics, University of Exeter, Stocker Road, Exeter, EX4 4QL

University of Exeter, United Kingdom, Start date: 1 May to 1 October 2012

The Astrophysics group at the University of Exeter invites applications for an Associate Research Fellow (post-doc) to work primarily with Professor Matthew Bate on theoretical aspects of planet formation.

This STFC-funded position is available for a fixed term period of up to 36 months commencing between 1 May 2012 and 1 October 2012. The post is subject to a 12 month probationary period.

The broad goal of the position is to use three-dimensional radiation hydrodynamical modelling of dusty protoplanetary discs to improve our understanding of planet formation and migration and to predict the observational characteristics of protoplanets that may be observed with ALMA and infrared interferometric instruments in the near future. The calculations will be performed using an existing smoothed particle hydrodynamics (SPH) code that includes radiative transfer and models both gas and dust, with some code development required.

Applicants must possess a PhD in astrophysics or a related discipline, or expect to have earned this award before taking up the position, and be able to demonstrate sufficient knowledge of the discipline and of research methods and techniques to work within established research programmes. Applicants will be experienced in performing, analysing, and publishing the results of numerical astrophysical fluid dynamical calculations. Prior experience in using SPH and/or modelling planet formation or astrophysical dust/gas mixtures is desirable.

Extensive supercomputing resources and limited funding for computing equipment and travel will be available to the post holder.

The starting salary will be from £24,520 per annum on Grade E, depending on qualifications and experience.

For further information, please contact Professor Matthew Bate, email mbate@astro.ex.ac.uk. To apply, please send your CV, a brief summary of your research interests and a covering letter containing the contact details of three referees, to Matthew Bate quoting the job reference number P43110. Applications received by 1 April 2012 will receive full consideration.

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

Postdoctoral Position in Exoplanet Atmospheres with HST

David K. Sing and Frederic Pont
Astrophysics Group, School of Physics, University of Exeter, Stocker Road, Exeter, EX4 4QL

University of Exeter, Review of applications will begin 31 March 2012 and will continue until the post is filled.

Applications are invited for an Associate Research Fellow position within the astrophysics group at the University of Exeter. The successful candidate will work on a Large Hubble Space Telescope program performing an atmospheric survey of hot-Jupiter extrasolar planets. The overall aims of the project are to comparing atmospheric properties, detecting strong absorbers, and probe the diversities between possible sub-classes.

The position is based in Exeter, UK, and will work with Dr. David Sing and Prof. Frederic Pont at Exeter as well as the Co-I of the HST project, which include Oxford, U. of Arizona, Caltech, Princeton, UC Santa Cruz, U. of Maryland, and IAP Paris.

The position is available immediately but the start date can be negotiated up until 1 October 2012, on a fixed term basis of 36 months. The post is subject to a 12 month probationary period. The prospective applicants must have a PhD in (Astro)physics, Astronomy, or an equivalent degree. Projects on data reduction and analysis or atmospheric spectral modeling are both viable. Prior experience observing transiting extrasolar planets or modeling their atmospheres is highly preferred.

The successful applicant will be able to present information on research progress and outcomes, communicate complex information, orally, in writing and electronically and prepare proposals and applications to external bodies.

For further information please contact Dr. David Sing (sing@astro.ex.ac.uk). Applications should email a CV, publication list as well as a brief description of their research interests as well as contact details of three referees. The position has a salary circa £24,520-27,428. Review of applications will begin 31 March 2012 and will continue until the post is filled.

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

Fizeau exchange visitors program in optical interferometry - call for applications

European Interferometry Initiative

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

The deadline for applications is the 15th March for visits starting 1st of May.

Note that an early next call may be issued in June for visits starting in July.

Further informations and application forms can be found at: www.european-interferometry.eu
The program is funded by OPTICON/FP7.

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

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

Contact: `fizeau@european-interferometry.eu`

5 Conference announcements

Saas-Fee 2012: Dynamics of Young Star Clusters & Associations

Michael R. Meyer & Laurent Eyer

Villars-sur-Ollon, Switzerland, 25–31 March 2012

This is the final announcement for the Saas-Fee Winter Course 2012. The program is a series of lectures concerning the theory and observational constraints on the dynamics of young star clusters and associations. With the proliferation of large area photometric, radial velocity, and astrometric surveys from ground-based telescopes, the launch of Gaia planned for 2013, and the explosive increase in our capacity to simulate the dynamics of these complex systems, the time is right to visit this topic. The school will attempt to address such questions as:

1) How common are star-forming events of varying richness?
2) What are the dynamical states of these events?
3) In what sort of star-forming event did the Sun form?
4) How can we use answers to these questions to constrain predictive theories of star formation?

These questions will be addressed by the following distinguished international faculty:
Prof. Cathie Clarke, Institute of Astronomy, University of Cambridge
Prof. Robert Mathieu, Dept. of Astronomy, University of Wisconsin
Dr Neill Reid, Space Telescope Science Institute

Additionally, we are pleased to announce that Dr Timo Prusti, Gaia Project Scientist, will present a talk on the latest news and status of the Gaia mission. Gaia will revolutionise our understanding of the kinematics of young star clusters and associations, and Dr Prusti's lecture will be a timely introduction to our winter school, which will not only summarise the current state of the field, but also look forward to future research in light of new observational and computational developments.

These schools, which began over 40 years ago, are intended for graduate students, post-doctoral fellows, and senior researchers interested in learning more about the topic. Registration is now open, and the places on the school are rapidly filling up. We recommend that interested persons register as soon as possible, **before the final deadline of March 15, 2012**. The school is limited to 100 participants. Villars-sur-Ollon, Switzerland is located in the heart of the Alpes Vaudoises and provides a range of winter sport and other activities. It will provide an excellent setting for this school. We will also host several social events in the venue, including the conference banquet and a Konzert des Cors des Alpes - alphorn concert and Apero Fromage d'Etivaz vin blanc.

Individuals requiring financial assistance to attend the meeting are encouraged to contact the LOC directly, where their request will be evaluated on a case-by-case basis.

Download/Website: `http://www.astro.phys.ethz.ch/sf2012/`

Contact: `saas-fee-course-2012@phys.ethz.ch`

Cosmic Dust

SOC: A. Inoue, C. Jäger, H. Kimura [Chair], L. Kolokolova, A. Krivov, A. Li, K. Nakamura-Messenger, T. Yamamoto – LOC: C. Güttler, A. Inoue, H. Kimura [Chair], H. Kobayashi, H. Senshu, A. Takigawa, K. Wada, T. Yamamoto

Kobe, Japan, August 6-10, 2012

This is the fifth meeting on Cosmic Dust. This series of Cosmic Dust meetings aims at finding a consensus among experts on the formation and evolution of cosmic dust: where it comes from and where it goes. The meeting is organized by dust freaks who are very enthusiastic not only to make the goal achievable but also to establish a dust community across Asian and Oceanian countries for the development of cosmic dust research worldwide. For this reason, the primary objectives of the meeting are to bring together professionals who deal with cosmic dust and to provide an opportunity for participants to develop human relations and interactions between the participants.

SCOPE:
All kinds of cosmic dust such as intergalactic dust & interstellar dust & protoplanetary disk dust & debris disk dust & cometary dust & asteroidal dust & interplanetary dust & circumplanetary dust & stellar nebular condensates & presolar grains & micrometeorites & meteoroids & meteors & regolith particles are the subject of discussion. The meeting is open for any aspects of dust research by means of different methods of studies (in-situ and laboratory measurements, astronomical observations, laboratory and numerical analogue simulations, theoretical modeling, etc.). All dust-related topics, for example, the formation of molecules and their reactions on and their desorption from the surface of dust particles, are also welcome. Publishing the proceedings of this meeting as a special issue of a peer-reviewed journal is currently being planned, while paper submission to the proceedings is not obligatory.

Admissions Application:
Please complete online meeting application at the CPS website in order to attend the meeting. Because the number of participants shall be limited, the online application does not guarantee admission to the meeting. Participants will be determined at the discretion of the SOC and all applicants will be notified of the admissions decision. Priority will be given to those who contribute to oral or poster sessions and retain enthusiasm for discussions throughout the meeting. For further details, please visit the Cosmic Dust website.

IMPORTANT DATES:
13 May 2012, Deadline for Admissions Applications
31 May 2012, Notification of Admissions Decisions
6-10 August 2012, Cosmic Dust

Download/Website: `https://www.cps-jp.org/ dust/`

Contact: `dust-inquiries@cps-jp.org`

22nd UCL Astrophysics Colloquium 'Opacities in Cool Stars and Exoplanets'

Jonathan Tennyson[1]*, France Allard*[2]*, Bob Barber*[1]*, Sergei Yurchenko*[1]*, Christian Hill*[1]

[1] Department of Physics & Astronomy, University College London, Gower Street, London, UK
[2] CRAL-ENS, 46, Allée d'Italie, Lyon Cedex 07, France

Cumberland Lodge, The Great Park Windsor, Berkshire, SL4 2HP, UK, 2 - 5 July 2012

In July this year, following immediately after the Barcelona, Cool Star 17, we will be holding a conference 'Opacities in Cool Stars and Exoplanets' (22nd UCL Astrophysics Colloquium) at Cumberland Lodge near to London. The conference will begin at lunchtime on Monday 2 July with departure after breakfast on Thursday 5 July.
Cumberland Lodge is a 17th Century house located in Great Windsor Park. It offers easy access to Heathrow and is close to Windsor Castle, which is the oldest and largest occupied castle in the world and the official residence of Her Majesty the Queen. We would aim to visit the castle during the course of the conference. You may like to look at the Cumberland Lodge website: http://www.cumberlandlodge.ac.uk/
The provisional programme includes sessions on: Existing sources of opacity data, New opacity data, Advances in understanding brown dwarf atmospheres, characterising exoplanet atmospheres, Modelling the transitions between cool stars to brown dwarfs to planetary mass objects, and Observational issues.
Invited speakers are:

- France Allard: Centre de Recherche Astrophysique de Lyon
- Adam Burgasser: Associate Professor, Univesity of California, San Diego Center for Astrophysics and Space Science
- Michel Herman: Co-director of the Laboratoire de Chimie Quantique et Photophysique at Universite libre de Bruxelles
- Bob Kurucz: Harvard-Smithsonian Center for Astrophysics, Cambridge MA
- Tim Lee: Acting Divisional Director, Space Science and Astrobiology Division at NASA Ames
- Mark Marley: Planetary Systems Branch, NASA Ames
- Sara Seager: Massachusetts Institute of Technology, Cambridge MA.
- Jonathan Tennyson: University College London

We have gaps for 20 minute talks and posters if you want to present work.
You will find further details including: a registration form, details of payments and abstract submissions on the Conference website.
If you plan to participate in the conference you must register by means of our www fill-out-form. As an accommodation at Cumberland Lodge is limited the registration will be at the first come basis. The payment is not yet due, but the prices are already displayed on the website. We will email you at the appropriate time to advise how to proceed to make the payment.
We very much hope that you will be able to attend the conference.

Download/Website: `http://www.exomol.com/conference/2012/`

Contact: `Bob Barber: bob@theory.phys.ucl.ac.uk`

50 Years of Brown Dwarfs: from Theoretical Prediction to Astrophysical Studies

SOC: V. Joergens, I. Baraffe, G. Basri, W. Brandner, A. Burgasser, C. Clarke, Th. Henning, R. Klessen, K. Stassun

Ringberg castle, Germany, Oct 21-24, 2012

This workshop will take place exactly 50 years after the theoretical prediction of the existence of brown dwarfs, i.e. of degenerate objects just not massive enough to sustain stable hydrogen fusion. The exploration of brown dwarfs has seen tremendous progress over the last years since the first discoveries in the 90ies. How brown dwarfs form, however, is still one of the main open questions in the theory of star formation. A key role to answer this question play brown dwarfs as members of binary and multiple systems. Steadily improving instrumental performance led to the discovery of companions around brown dwarfs down to planetary masses, to size (radii) and dynamical mass determinations, and to statistically significant samples of very low-mass binaries. These detailed empirical characterizations of brown dwarfs enable us to test and calibrate increasingly sophisticated models of internal structure, atmosphere, and formation of substellar objects.
The Ringberg workshop will open with a celebration of the 50th anniversary of Shiv Kumars's theoretical prediction of brown dwarfs and proceed to explore the origin of brown dwarfs with a focus on brown dwarf binaries. The aim is to foster a close link between observational binary studies (RV and direct imaging, incl. individual benchmark systems) and theories in the field of brown dwarf formation. The program will include invited review talks on the main topics as well as contributed talks. We cordially invite the community for abstract submissions.
Registration deadline: April 15, 2012. The number of participants is limited to 70.

Download/Website: `http://www.mpia.de/homes/joergens/ringberg2012.html`

Contact: `ringberg2012@mpia.de`

Comparative Climatology of Terrestrial Planets

Dr. Mark Bullock[1] *& Dr. Lori Glaze*[2]
[1] Southwest Research Institute
[2] NASA Goddard Space Flight Center

Hotel Boulderado, 2115 Thirteenth Street, Boulder CO 80302, June 25-28, 2012

The conference on Comparative Climatology of Terrestrial Planets will be held June 2528, 2012, at the Hotel Boulderado, Boulder, Colorado.
The goal of this conference is to look at climate in the broadest sense possible by comparing the processes at work on the four terrestrial bodies, Earth, Venus, Mars, and Titan, and on terrestrial planets around other stars. These processes include the interactions of shortwave and thermal radiation with the atmosphere, condensation and vaporization of volatiles, atmospheric dynamics and chemistry, and the role of the surface, and interior, sun and other external factors in the long-term evolution of climate. Conference talks will compare the scientific questions, methods, numerical models, and spacecraft remote sensing experiments for Earth, and the other planets, with the goal of identifying objectives for future research and missions. Please visit: www.lpi.usra.edu/meetings/climatology2012/climatology20121st.shtml for more information about the conference. To subscribe to a mailing list to receive electronic reminders and special announcements relating to the meeting via e-mail, please submit an electronic Indication of Interest form by February 27, 2012 at: https://www.lpi.usra.edu/meeting_portal/iofi/?mtg=climatology2012.
The meeting is sponsored by all four divisions of NASA/SMD. Other sponsors include IUGG/IAMAS, SwRI and meeting support is provided by LPI.

Download/Website: `www.lpi.usra.edu/meetings/climatology2012/climatology20121st.shtml`

Contact: `bullock@boulder.swri.edu`

2012 Sagan Summer Workshop: Working with Exoplanet Light Curves

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

Pasadena, CA, July 23-27, 2012

Registration is now open for the 2012 Sagan Exoplanet Summer Workshop on "Working with Exoplanet Light Curves". The workshop will take place on the Caltech campus July 23 - 27, 2012. The workshop is intended for graduate students and postdocs interested in learning more about working with light curves, however all interested parties are welcome to attend.

This workshop will explore the use of exoplanet light curves to study planetary system architectures and atmospheres and to discover exomoons and ring systems. Attendees will participate in hands-on exercises to gain experience in working with Kepler and other transit light curves, and will also have the opportunity to present their own work through short presentations (research POPs) and electronic posters. The preliminary agenda can be found on the workshop website and the list of topics to be covered includes:

- The Promise of Transits
- Basic Light Curve Models
- Validation and Confirmation of Transit Signals
- Characterization of Exoplanet Atmospheres
- Planetary Architecture
- Available Analysis Packages
- Working with Kepler Data
- Introduction to Transit Spectroscopy

Important Dates

- March 26: Financial Support decisions announced via email (application deadline March 2)
- April 2: POP/Poster/Talk Submission Page On-line
- June 15: Early on-line registration ends
- June 21: Hotel Registration deadline to be eligible for group rate
- June 29: POP/Poster Submission deadline
- July 13: On-line registration closed
- July 13: Talk Submission by workshop speakers deadline and final agenda posted
- July 22: Sagan Exoplanet Summer Workshop Opening Reception
- July 23-27: 2012 Sagan Exoplanet Summer Workshop

Download/Website: `http://nexsci.caltech.edu/workshop/2012`
Contact: `sagan_workshop@ipac.caltech.edu`

6 As seen on astro-ph

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

astro-ph/1202.0026: **Ohmic Heating Suspends, not Reverses, the Cooling Contraction of Hot Jupiters** by *Yanqin Wu, Yoram Lithwick*

astro-ph/1202.0083: **The GJ 436 System: Directly Determined Astrophysical Parameters of an M-Dwarf and Implications for the Transiting Hot Neptune** by *Kaspar von Braun et al.*

astro-ph/1202.0265: **The McDonald Observatory Planet Search: New Long-Period Giant Planets, and Two Interacting Jupiters in the HD 155358 System** by *Paul Robertson et al.*

astro-ph/1202.0446: **A planetary system around the nearby M dwarf GJ 667C with at least one super-Earth in its habitable zone** by *Guillem Anglada-Escudé et al.*

astro-ph/1202.0557: **G** by *l*obal Models of Runaway Accretion in White Dwarf Debris Disks Brian D. Metzger, Roman R. Rafikov, Konstantin V. Bochkarev Comments: 23 pages, 20 figures, submitted to MNRAS Subjects: Earth and Planetary Astrophysics (astro-ph.EP); Solar and Stellar Astrophysics (astro-ph.SR)

astro-ph/1202.0771: **Dead zones as safe-havens for planetesimals: influence of disc mass and external magnetic field** by *Oliver Gressel, Richard P. Nelson, Neal J. Turner*

astro-ph/1202.0819: **Laser frequency comb techniques for precise astronomical spectroscopy** by *Michael T. Murphy et al.*

astro-ph/1202.0903: **One or more bound planets per Milky Way star from microlensing observations** by *A. Cassan et al.*

astro-ph/1202.1265: **Oscillations in the Habitable Zone around Alpha Centauri B** by *Duncan Forgan*

astro-ph/1202.1287: **The Arecibo Detection of the Coolest Radio-flaring Brown Dwarf** by *Matthew Route, Alex Wolszczan*

astro-ph/1202.1314: **Quantifying Jupiter's influence on the Earth's impact flux: Implications for planetary habitability** by *J. Horner, B. W. Jones*

astro-ph/1202.1562: **Spitzer/MIPS 24 micron Observations of HD 209458b: 2.5 transits, 3 eclipses, and a Phase Curve Corrupted by Instrumental Sensitivity Variations** by *Ian J. M. Crossfield et al.*

astro-ph/1202.1564: **Long-term magnetic activity of a sample of M-dwarf stars from the HARPS program II. Activity and radial velocity** by *J. Gomes da Silva et al.*

astro-ph/1202.1760: **A massive exoplanet candidate around KOI-13: Independent confirmation by ellipsoidal variations** by *D. Mislis, S. Hodgkin*

astro-ph/1202.1826: **T** by *he KELT-South Telescope* Joshua Pepper et al.

astro-ph/1202.1868: **Orbital migration of interacting low-mass planets in evolutionary radiative turbulent models** by *Brandon Horn et al.*

astro-ph/1202.1883: **A Two-Dimensional Infrared Map of the Extrasolar Planet HD 189733b** by *C. Majeau, E. Agol, N. Cowan*

astro-ph/1202.2362: **On the origin of planets at very wide orbits from re-capture of free floating planets** by *Hagai B. Perets, M.B.N. Kouwenhoven*

astro-ph/1202.2377: **The Habitable Zone Gallery** by *Stephen R. Kane, Dawn M. Gelino*

astro-ph/1202.2467: **The HARPS search for southern extra-solar planets XXXV. Super-Earths around the M-dwarf neighbors Gl433 and Gl667C** by *X. Delfosse et al.*

astro-ph/1202.2570: **The HARPS-TERRA project I. Description of the algorithms, performance and new measurements on a few remarkable stars observed by HARPS** by *Guillem Anglada-Escud, R. Paul Butler*

astro-ph/1202.2579: **Constrains on planets around beta Pic with Harps radial velocity data** by *A.-M. Lagrange et al.*

astro-ph/1202.2644: **The Maximal Runaway Temperature of Earth-like Planets** by *Nir J. Shaviv, Giora Shaviv,* *Rainer Wehrse*

astro-ph/1202.2655: **Orbital characterization of the Beta Pictoris b giant planet** by *G. Chauvin et al.*

astro-ph/1202.2799: **Extrasolar Planet Transits Observed at Kitt Peak National Observatory** by *Pedro V. Sada et al.*

astro-ph/1202.2801: **Comparing HARPS and Kepler surveys: On the alignment of multiple-planet systems** by *P. Figueira et al.*

astro-ph/1202.3139: **The Great Escape II: Exoplanet Ejection from Dying Multiple Star Systems** by *Dimitri Veras, Christopher A. Tout*00

astro-ph/1202.3345: **The Influence of Atmospheric Scattering and Absorption on Ohmic Dissipation in Hot Jupiters** by *Kevin Heng*

astro-ph/1202.3435: **Detection of Ks-band Thermal Emission from WASP-3b** by *Ming Zhao et al.*

astro-ph/1202.3465: **Gaps in Protoplanetary Disks as Signatures of Planets: I. Methodology and Validation** by *Hannah Jang-Condell, Neal J. Turner*

astro-ph/1202.3566: **Sundman Stability of Natural Planet Satellites** by *L.G. Lukyanov, V.S. Uralskaya*

astro-ph/1202.3623: **Evidence for enhanced chromospheric Ca II H & K emission in stars with close-in extra-solar planets** by *Tereza Krejcova, Jan Budaj*

astro-ph/1202.3784: **Constraints on the Lifetimes of Disks Resulting from Tidally Destroyed Rocky Planetary Bodies** by *J. Girven et al.*

astro-ph/1202.3785: **Using Kepler transit observations to measure stellar spot belt migration rates** by *J. Llama et al.*

astro-ph/1202.3829: **Secondary eclipse scanning of HD189733b: The perspectives of mapping distant worlds** by *Julien de Wit et al.*

astro-ph/1202.4586: **A lucky imaging multiplicity study of exoplanet host stars** by *C. Ginski et al.*

astro-ph/1202.4721: **Temperature-Pressure Profile of the hot Jupiter HD 189733b from HST Sodium Observations: Detection of Upper Atmospheric Heating** by *Catherine M. Huitson et al.*

astro-ph/1202.5042: **From Cosmos to Intelligent Life: The Four Ages of Astrobiology** by *Marcelo Gleiser*

astro-ph/1202.5048: **Life's Chirality From Prebiotic Environments** by *Marcelo Gleiser, Sara Imari Walker*

astro-ph/1202.5112: **An HST search for planets in the lower Main Sequence of the globular cluster NGC 6397** by *V. Nascimbeni et al.*

astro-ph/1202.5314: **Searching for Planets During Predicted Mesolensing Events: II. PLAN-IT: An Observing Program and its Application to VB 10** by *Rosanne Di Stefano, James Matthews, Sebastien Lepine*

astro-ph/1202.5316: **Searching for Planets During Predicted Mesolensing Events: I. Theory, and the Case of VB 10** by *Rosanne Di Stefano, James Matthews, Sebastien Lepine*

astro-ph/1202.5394: **They might be giants: luminosity classes, planet frequency, and planet-metallicity relation of the coolest Kepler target stars** by *Andrew W. Mann et al.*

astro-ph/1202.5412: **Minimum Dust Abundances for Planetesimal Formation via Secular Gravitational Instabilities** by *Taku Takeuchi, Shigeru Ida*

astro-ph/1202.5487: **Resolving the terrestrial planet forming regions of HD113766 and HD172555 with MIDI** by *R. Smith, M.C. Wyatt, C.A. Haniff*

astro-ph/1202.5505: **Chemistry in protoplanetary disks (short review in Russian)** by *Dmitry A. Semenov*

astro-ph/1202.5554: **Deserts and pile-ups in the distribution of exoplanets due to photoevaporative disc clearing** by *R.D.Alexander, I.Pascucci*

astro-ph/1202.5608: **Global Calculations of Density Waves and Gap Formation in Protoplanetary Disks using a Moving Mesh** by *Paul C. Duffell, Andrew I. MacFadyen*

astro-ph/1202.5852: **Planetary Candidates Observed by Kepler, III: Analysis of the First 16 Months of Data** by *0* Natalie M. Batalha et al.

astro-ph/1202.5865: **Can GJ 876 host four planets in resonance?** by *Enrico Gerlach, Nader Haghighipour*

astro-ph/1202.5884: **Metallicity of solar-type stars with debris discs and planets** by *J. Maldonado, et al.*

astro-ph/1202.6007: **Planet Hunters: New Kepler planet candidates from analysis of quarter 2** by *Chris*

Lintott et al.

astro-ph/1202.6102: **Planetesimal Dynamics in Inclined Binary Systems: The Role of Gas-Disk Gravity** by *Gang Zhao et al.*

astro-ph/1202.6139: **Discovery of Small-Scale Spiral Structures in the Disk of SAO 206462 (HD 135344B): Implications for the Physical State of the Disk from Spiral Density Wave Theory** by *T. Muto et al.*

astro-ph/1202.6199: **Factors Affecting the Radii of Close-in Transiting Exoplanets** by *B.Enoch, A.Collier Cameron, K.Horne*

astro-ph/1202.6255: **Physical properties and radius variations in the HAT-P-5 planetary system from simultaneous four-colour photometry** by *John Southworth et al.*

astro-ph/1202.6328: **Architecture of Kepler's Multi-transiting Systems: II. New investigations with twice as many candidates** by *Daniel C. Fabrycky et al.*

astro-ph/1202.6372: **The Last Stages of Terrestrial Planet Formation: Dynamical Friction and the Late Veneer** by *Hilke E. Schlichting, Paul H. Warren, Qing-Zhu Yin*

astro-ph/1202.6379: **Observational constraints on tidal effects using orbital eccentricities** by *Nawal Husnoo et al.*

astro-ph/1202.0548: **Limb darkening laws for two exoplanet host stars derived from 3D stellar model atmospheres** by *W. Hayek et al.*