ExoPlanet News
An Electronic Newsletter

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1 Editorial

Welcome to the forty-fifth edition of ExoPlanet News. This month's newsletter is a little shorter than usual – presumably as people wind down to the end of the year! Nonetheless we still have a fine selection of exoplanet-related abstracts, and the usual selection of announcements and opportunities.
We will take a break around the New Year, so the next edition of the newsletter is planned for the beginning of February 2012. 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 Abstracts of refereed papers

The SOPHIE search for northern extrasolar planets. IV. Massive companions in the planet - brown dwarf boundary

R. F. Díaz[1,2], A. Santerne[3], J. Sahlmann[4], G. Hébrard[1,2], A. Eggenberger[5], N. C. Santos[6,7], C. Moutou[3], L. Arnold[2], I. Boisse[6], X. Bonfils[5], F. Bouchy[1,2], X. Delfosse[5], M. Desort[5], D. Ehrenreich[5], T. Forveille[5], A.-M. Lagrange[5], C. Lovis[4], F. Pepe[4], C. Perrier[5], D. Queloz[4], D. Ségransan[4], S. Udry[4], A. Vidal-Madjar[1]

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Astronomy & Astrophysics, in press (arXiv:1111.1168)

The mass domain where massive extrasolar planets and brown dwarfs lie is still poorly understood. Indeed, not even a clear dividing line between massive planets and brown dwarfs has been established yet. This is partly because these objects are very scarce in close orbits around solar-type stars, the so-called brown dwarf desert. Owing to this, it has proven difficult to set up a strong observational base with which to compare models and theories of formation and evolution. We search to increase the current sample of massive sub-stellar objects with precise orbital parameters, and to constrain the true mass of detected sub-stellar candidates.
The initial identification of sub-stellar candidates was made using precise radial velocity measurements obtained with the SOPHIE spectrograph at the 1.93-m telescope of the Haute-Provence Observatory. Subsequent characterisation of these candidates, with the principal aim of identifying stellar companions in low-inclination orbits, was made by means of different spectroscopic diagnostics such as the measurement of the bisector velocity span and the study of the correlation mask effect. With this objective, we also employed astrometric data from the Hipparcos mission, and a novel method of simulating stellar cross-correlation functions.
Seven new objects with minimum masses between $\sim 10\ \mathrm{M_{Jup}}$ and $\sim 90\ \mathrm{M_{Jup}}$ are detected. Out of these, two are identified as low-mass stars in low-inclination orbits, and two others have masses below the theoretical deuterium-burning limit, and are therefore planetary candidates. The remaining three are brown dwarf candidates; the current upper limits for their the masses do not allow us to conclude on their nature. Additionally, we have improved the parameters of an already-known brown dwarf (HD137510b), confirmed by astrometry.

Download/Website: `http://arxiv.org/abs/1111.1168`

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Transmission spectrum of Venus as a transiting exoplanet

D. Ehrenreich[1], A. Vidal-Madjar[2], T. Widemann[3], G. Gronoff[4], P. Tanga[5], M. Barthélemy[1], J. Lilensten[1], A. Lecavelier des Etangs[2], L. Arnold[6]

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Astronomy & Astrophysics Letters, accepted

On 5–6 June 2012, Venus will be transiting the Sun for the last time before 2117. This event is an unique opportunity to assess the feasibility of the atmospheric characterisation of Earth-size exoplanets near the habitable zone with the transmission spectroscopy technique and provide an invaluable proxy for the atmosphere of such a planet. In this letter, we provide a theoretical transmission spectrum of the atmosphere of Venus that could be tested with spectroscopic observations during the 2012 transit. This is done using radiative transfer across Venus' atmosphere, with inputs from in-situ missions such as *Venus Express* and theoretical models. The transmission spectrum covers a range of 0.1–5 μm and probes the limb between 70 and 150 km in altitude. It is dominated in UV by carbon dioxide absorption producing a broad transit signal of $\sim$ 20 ppm as seen from Earth, and from 0.2 to 2.7 μm by Mie extinction ($\sim$ 5 ppm at 0.8 μm) caused by droplets of sulfuric acid composing an upper haze layer above the main deck of clouds. These features are not expected for a terrestrial exoplanet and could help discriminating an Earth-like habitable world from a cytherean planet.

Download/Website: `http://ipag.osug.fr/~dehrenre/articles/ehrenreich2011d-preprint.pdf`

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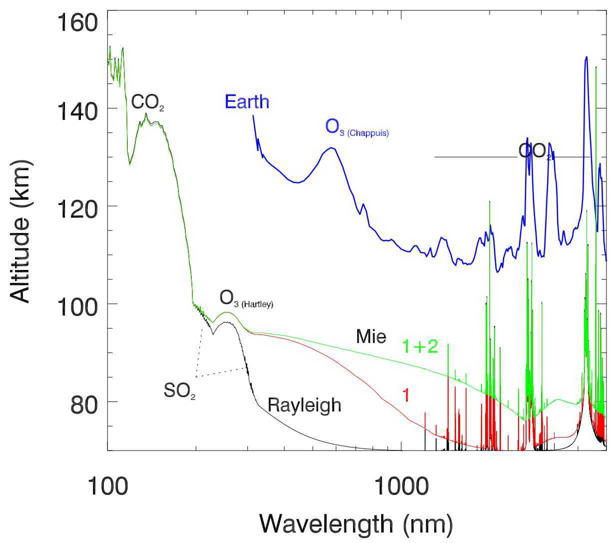

Figure 1: (Ehrenreich et al.) Transit spectrum of Venus, as seen from Earth, expressed in effective height of absorption. The different transit spectra shown are models with no upper haze (black), mode-1 upper haze (red), and modes-1+2 upper haze (green). The top of the main cloud deck is set at 70 km. The transit spectrum of the Earth calculated by Kaltenegger & Traub (2009, ApJ, 698, 519) is overplotted (blue) and shifted by +100 km for clarity.

Origin and Detectability of coorbital planets from radial velocity data

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Monthly Notices of the Royal Astronomical Society, in press (arXiv:1112.0223)

We analyze the possibilities of detection of hypothetical exoplanets in coorbital motion from synthetic radial velocity (RV) signals, taking into account different types of stable planar configurations, orbital eccentricities and mass ratios. For each nominal solution corresponding to small-amplitude oscillations around the periodic solution, we generate a series of synthetic RV curves mimicking the stellar motion around the barycenter of the system. We then fit the data sets obtained assuming three possible different orbital architectures: (a) two planets in coorbital motion, (b) two planets in a 2/1 mean-motion resonance, and (c) a single planet. We compare the resulting residuals and the estimated orbital parameters.

For synthetic data sets covering only a few orbital periods, we find that the discrete radial velocity signal generated by a coorbital configuration could be easily confused with other configurations/systems, and in many cases the best orbital fit corresponds to either a single planet or two bodies in a 2/1 resonance. However, most of the incorrect identifications are associated to dynamically unstable solutions.

We also compare the orbital parameters obtained with two different fitting strategies: a simultaneous fit of two planets and a nested multi-Keplerian model. We find that, even for data sets covering over ten orbital periods, the nested models can yield incorrect orbital configurations (sometimes close to fictitious mean-motion resonances) that are nevertheless dynamically stable and with orbital eccentricities lower than the correct nominal solutions.

Finally, we discuss plausible mechanisms for the formation of coorbital configurations, by the interaction between two giant planets and an inner cavity in the gas disk. For equal mass planets, both Lagrangian and anti-Lagrangian configurations can be obtained from same initial condition depending on final time of integration.

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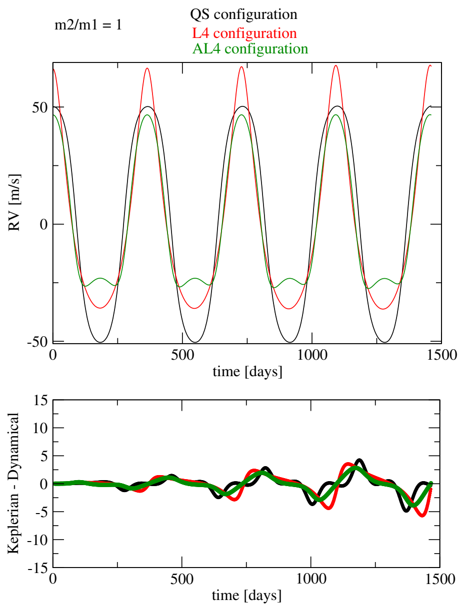

Figure 2: (Giuppone et al.) **Top:** Synthetic radial velocity curves generated with an N-body integrator for three different orbital configurations, specified in the top of the graph for the first conditions in Table 1. **Bottom:** Difference between radial velocities calculated from the N-body integration and those generated with Keplerian model. Although the difference increases with time, it remain below 4 m/s even after four orbital periods.

Transiting exoplanets from the *CoRoT* space mission - XIX. Corot-23b: a dense hot Jupiter on an eccentric orbit

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Astronomy & Astrophysics, in press

We report the detection of Corot-23b, a hot Jupiter transiting in front of its host star with a period of 3.6314 ± 0.0001 days. This planet was discovered thanks to photometric data secured with the CoRoT satellite, combined with spectroscopic radial velocity (RV) measurements. A photometric search for possible background eclipsing binaries conducted at CFHT and OGS concluded with a very low risk of false positives. The usual techniques of combining RV and transit data simultaneously were used to derive stellar and planetary parameters. The planet has a mass of $M_{pl} = 2.8 \pm 0.3\,\mathrm{M}_{Jup}$, a radius of $R_{pl} = 1.05 \pm 0.13\,\mathrm{R}_{Jup}$, a density of ≈ 3 g cm^{-3}. RV data also clearly reveal a non zero eccentricity of $e = 0.16 \pm 0.02$. The planet orbits a *mature* G0 main sequence star of V =15.5 mag, with a mass $M_* = 1.14 \pm 0.08\,\mathrm{M}_\odot$, a radius $R_* = 1.61 \pm 0.18\,\mathrm{R}_\odot$, and quasi-solar abundances. The age of the system is evaluated to be 7 Gyr, not far from the transition to subgiant, in agreement with the rather large stellar radius. The two features of a significant eccentricity of the orbit and of a fairly high density are fairly uncommon for a hot Jupiter. The high density is, however, consistent with a model of contraction of a planet at this mass, given the age of the system. On the other hand, at such an age, circularization is expected to be completed. In fact, we show that for this planetary mass and orbital distance, any initial eccentricity should not totally vanish after 7 Gyr, as long as the tidal quality factor Q_p is more than a few 10^5, a value that is the lower bound of the usually expected range. Even if Corot-23b, features a density and an eccentricity that are atypical of a hot Jupiter, it is thus not an enigmatic object.

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Refined physical properties of the HAT-P-13 planetary system

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Monthly Notices of the Royal Astronomical Society, in press (arXiv:1111.5432)

We present photometry of four transits of the planetary system HAT-P-13, obtained using defocussed telescopes. We analyse these, plus nine datasets from the literature, in order to determine the physical properties of the system. The mass and radius of the star are $M_{\rm A} = 1.320 \pm 0.048 \pm 0.039 {\rm M}_{\odot}$ and $R_{\rm A} = 1.756 \pm 0.043 \pm 0.017 {\rm R}_{\odot}$ (statistical and systematic errorbars). We find the equivalent quantities for the transiting planet to be $M_{\rm b} = 0.906 \pm 0.024 \pm 0.018\,{\rm M}_{\rm Jup}$ and $R_{\rm b} = 1.487 \pm 0.038 \pm 0.015\,{\rm R}_{\rm Jup}$, with an equilibrium temperature of $T_{\rm eq} = 1725 \pm 31\,{\rm K}$. Compared to previous results, which were based on much sparser photometric data, we find the star to be more massive and evolved, and the planet to be larger, hotter and more rarefied. The properties of the planet are not matched by standard models of irradiated gas giants. Its large radius anomaly is in line with the observation that the hottest planets are the most inflated, but at odds with the suggestion of inverse proportionality to the [Fe/H] of the parent star. We assemble all available times of transit midpoint and determine a new linear ephemeris. Previous findings of transit timing variations in the HAT-P-13 system are shown to disagree with these measurements, and can be attributed to small-number statistics.

Download/Website: `http://www.astro.keele.ac.uk/~jkt/tepcat/`

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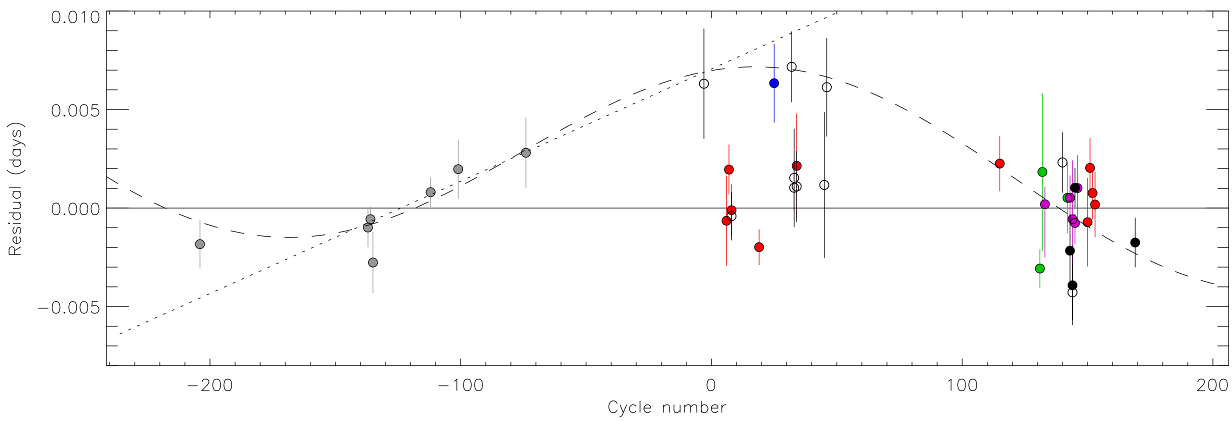

Figure 3: (Southworth et al.) Plot of the residuals of the timings of mid-transit of HAT-P-13 versus a linear ephemeris. The timings in black are from this work, in grey are from Bakos et al. (2009), blue from Szabo et al., (2010), lilac from Pál et al. (2011), green from Nascimbeni et al. (2011), red from Fulton et al. (2011), and open circles for amateur timings. The solid line shows the ephemeris from the current work and the dotted line that from Bakos et al. (2009). The dashed curve is an approximate representation of the possible periodicity proposed by Nascimbeni et al. (2011).

How do Most Planets Form? – Constraints on Disk Instability from Direct Imaging

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Astrophysical Journal, in press (arXiv:1111.5617)

Core accretion and disk instability have traditionally been regarded as the two competing possible paths of planet formation. In recent years, evidence have accumulated in favor of core accretion as the dominant mode, at least for close-in planets. However, it might be hypothesized that a significant population of wide planets formed by disk instabilities could exist at large separations, forming an invisible majority. In previous work, we addressed this issue through a direct imaging survey of B2–A0-type stars, and concluded that $<30\%$ of such stars form and retain planets and brown dwarfs through disk instability, leaving core accretion as the likely dominant mechanism. In this paper, we extend this analysis to FGKM-type stars by applying a similar analysis to the Gemini Deep Planet Survey (GDPS) sample. The results strengthen the conclusion that substellar companions formed and retained around their parent stars by disk instabilities are rare. Specifically, we find that the frequency of such companions is $<8\%$ for FGKM-type stars under our most conservative assumptions, for an outer disk radius of 300 AU, at 99% confidence. Furthermore, we find that the frequency is always $<10\%$ at 99% confidence independently of outer disk radius, for any radius from 5 to 500 AU. We also simulate migration at a wide range of rates, and find that the conclusions hold even if the companions move substantially after formation. Hence, core accretion remains the likely dominant formation mechanism for the total planet population, for every type of star from M-type through B-type.

Download/Website: `http://arxiv.org/abs/1111.5617`

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3 Jobs and Positions

PhD Opportunities in Exoplanets at the University of Leicester

Matt Burleigh

Dept. of Physics and Astronomy, University of Leicester, UK

University of Leicester, Deadline: February 29, 2012; start date: October 1, 2012

The University of Leicester invites applications for up to two PhD positions in extrasolar planet research, starting in October 2012.

Project 1: *Next Generation Transit Survey*: NGTS is a wide-field photometric survey designed to discover transiting extra-solar planets of Neptune-size and smaller. It will be built at the European Southern Observatory's Paranal site in Chile, with construction starting in early 2012. NGTS builds on the hardware and software heritage from the SuperWASP telescopes in South Africa and on La Palma, which have discovered more transiting extra-solar planets than any other ground-based experiment to date. All the data from NGTS will be processed and archived at Leicester. We would like to recruit an enthusiastic and passionate student to work with the Leicester NGTS team on commissioning and subsequently analysing and exploiting data from the survey. The project will be supervised jointly by Dr Matt Burleigh and Dr Mike Goad, and the student will also work closely with the designer of the Data Management System, Dr Richard West.

Project 2: *Extra-solar Planets and the Fate of Solar Systems*: What happens to a solar system when a star ends its life, first by expanding into a red giant and then finally shedding its outer layers to become a white dwarf? Will Earth-like planets survive? What happens to the outer planets? The Leicester white dwarf team, led by Dr Matt Burleigh, investigates the fate of solar systems like our own by searching for and studying planetary and brown dwarf companions to white dwarfs, using data from infrared surveys and ground and space-based observatories. We would like to recruit an enthusiastic PhD student to join our team to participate in this work.

For UK and eligible EU applicants, full funding will be available through STFC grants. Applications are also welcome from outside the EU. Other funding sources may be available for outstanding candidates not eligible for STFC studentships. Contact Dr Matt Burleigh for further information, and/or see the website below.

Download/Website: `http://www2.le.ac.uk/departments/physics/postgraduate-study`

Contact: `mbu@star.le.ac.uk`

4 Conference announcements

Protostars and Planets VI

Henrik Beuther, Ralf Klessen, Kees Dullemond, Thomas Henning

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Heidelberg, Germany, 15 – 20 July 2013

The Protostars and Planets series for more than three decades has served the community with state of the art compilations of the current knowledge in the fields of star and planet formation. The previous volume PPV is published in 2007, but the contents is based on the year of the corresponding conference in 2005 in Hawaii. Since then, the field of protostars and planets has advanced tremendously, from a theoretical as well as observational point of view. To give a few examples:

Regarding observational studies of star formation, the launch of the Herschel Space Observatory opened up a new window to investigate the peak of the spectral energy distribution of young star-forming regions, and SOFIA will continue exploring that wavelength regime. While previous investigations about the initial conditions of star formation often relied on more indirect approaches, we can now study the onset of star formation and the associated physical/chemical processes in unprecedented detail.

The exoplanet searching and characterization has progressed enormously. More than 700 extra-solar planets have been detected, and thanks to the Kepler mission more and more super-earth like objects are among these planets. Having large samples is important for deriving statistical characteristics of exoplanets and exoplanetary systems, and since PPV the population synthesis models to explain these systems have also progressed dramatically. Furthermore, the field of transit spectroscopy rises to adulthood, and we start obtaining spectra from extrasolar planetary atmospheres.

As for the planetary birth places: The amount of observational data of protoplanetary disks has multiplied: large quantities of Spitzer data are already there and published, Herschel data are currently streaming in and the first results of the Atacama Large Millimeter Array (ALMA) are expected. Also our knowledge about the underlying disk physics e.g. the role of the turbulence driving mechanisms has revolutionized. Our better numerical simulations of disks in combination with radiation transport lead currently to a breakthrough in the migration problem of planets.

Also in our theoretical (in particular numeric) understanding of how planets form there has been tremendous progress since PPV. For instance, there has been a clear paradigm shift in how planetesimals are formed from cosmic dust: The new buzz words are ”gravoturbulent planetesimal formation” and ”particle growth in pressure traps”. It is now feasible to engage in a multi-scale and multi-physics approach to modeling the birth of stars and planets.

Furthermore, 3-dimensional magnetohydrodynamic simulations combined with time-dependent chemistry and radiative transfer calculations allow for the self-consistent treatment of such diverse physical processes as molecular cloud formation in the turbulent multi-phase interstellar medium or studying the influence of ionizing feedback from the central high-mass star on the fragmentation and star-formation properties of the infalling envelope.
All in all it is high time for a new Protostars and Planets conference and a corresponding book. The Protostars and Planets conference will take place in Heidelberg, Germany, 15-20 July 2013. A call to the community for review chapters and their corresponding review talks will be posted in due time. The call will allow free suggestions of topics, but the SAC and the editors found it useful to compile a stawman's topic/chapter list as a guideline as to what we think the PPVI chapters might look like. This is by no means final. The list is:

Star Formation
- Formation of molecular clouds and global conditions for star formation
e.g., converging flows, turbulence, HI to H2 conversion, magnetic fields, filamentary structures
- Formation of individual stars and clusters
e.g., low- and high-mass star formation, core fragmentation, origin of IMF, magnetic fields
- Origin of stellar multiplicity
e.g., binaries and higher order systems, core fragmentation
- Importance of stellar feedback
e.g., winds, outflows, radiation
- Collapse and formation of protostellar disks
e.g., chemical evolution, main protostellar accretion phase (class 0), outflows, accretion rates, episodic accretion, magnetic fields, environmental conditions
- Formation of very low-mass stars, brown dwarfs and free-floating planets
- A unified picture from low- to high-mass and ”isolated” to clustered” star formation?

Formation and evolution of protoplanetary disks
- Physical characteristics of disks
e.g., disk sizes, masses, structure, characteristics, transition disks, environmental conditions
- Gas evolution in disks
e.g., initial conditions
- Dust evolution in disks
- Protoplanetary disks in cluster environment
e.g., radiation from O stars, dynamic interaction
- Cosmochemical constraints on disk evolution
e.g., isotopes in solar system, crystals, mixing, stardust
- Disk dynamics
e.g. dead zone, viscosity, stability, turbulence, instabilities
- Disk dissipation
e.g., photoevaporation, disk winds, transition disks

Planet formation and planetary systems
- Planetesimal formation
e.g., dust growth, gravoturbulence
- Terrestrial planet formation
- Giant planet formation
e.g., core accretion and disk instabilities
- Planet-disk interaction
e.g., migration, gaps
- Structure and evolution of debris disks

- Long term dynamical evolution of planetary systems
e.g., isolated and in clusters
- Chemical evolution of planetary systems
e.g., primitive matter in the solar system (refractory, ices, vapor), meteoritics
- Planetary system architecture
e.g. observations, size, mass, composition, orbits, resonances, misalignement
- The solar system in context of planet formation
e.g., asteroids, comets, KBOs, planets: orbits, masses
- Dating of major events in the solar system by isotope studies
- Planetary internal structures
e.g., terrestrial and giants, bloated, core masses, envelope structures
- Planetary atmospheres
e.g., terrestrial and giants
- Population synthesis

Astrophysical conditions for life
- Habitability
e.g., stellar distance to get water, moon, UV/X-rays
- Geochemical landscape for the formation of life
e.g., geochemical cycles, techtonics
- Formation of life
e.g., formation of cells and astrophysical signatures, left-right amino-acids

Scientific Advisory Committee (SAC): Philippe Andre, Javier Ballesteros-Paredes, Isabelle Baraffe, Alan Boss, John Bradley, Nuria Calvet, Gael Chauvin, Therese Encrenaz, Guido Garay, Tristan Guillot, Nader Haghighipour, Shigeru Ida, Ray Jayawardhana, Willy Kley, Alexander Krot, Katharina Lodders, Karl Menten, Michael Meyer, Alessandro Morbidelli, Ralph Pudritz, Bo Reipurth, Dimitar Sasselov, Motohide Tamura, Ewine van Dishoeck, Stephane Udry, Alycia Weinberger

We are looking forward to see you in Heidelberg in July 2013!

Henrik Beuther, Ralf Klessen, Kees Dullemond, Thomas Henning

Download/Website: `http://www.ppvi.org`
Contact: `info@ppvi.org`

NASA ExoPAG (Exoplanet Exploration Program Analysis Group)

Stephen C. Unwin[1], *James Kasting*[2]
[1] JPL/Caltech, 4800 Oak Grove Drive, Pasadena, CA, USA
[2] Dept. of Geosciences, Penn State University, USA

Austin, TX, Jan 7–8, 2012

Saturday, Jan 07, 2012, 8:00 AM - 5:30 PM Room 9BC, and
Sunday, Jan 08, 2012, 8:00 AM - 5:30 PM Room 9BC

NASA's Exoplanet Exploration Program Analysis Group (ExoPAG) will hold its fifth meeting on January 7-8, 2012. ExoPAG meetings are always open to the astronomical community, and are an opportunity to learn about the Exoplanet Exploration Program (ExEP), and to participate in discussions of scientific and technical issues in exoplanet exploration. Topics of interest will include plans for a future, space-based, flagship-class, direct imaging mission, along with discussion of possible Probe-class ($< \$1$B) missions that might be proposed in the next decade if money for flagships is not available. The ExoPAG would also like to broaden the discussion to include other ways in which NASA might facilitate exoplanet research over the next few years. The meeting will run for two full days, so there should be plenty of time for both presentations and discussion. Please join us! We look forward to seeing you in Austin!

Download/Website: `http://exep.jpl.nasa.gov/exopag/exopag5/agenda/`

Contact: `kasting@essc.psu.edu`

New Worlds Technology

Stephen C. Unwin, Peter Lawson
JPL/Caltech, 4800 Oak Grove Drive, Pasadena, CA, USA

Austin, TX, Jan 9–12, 2012

Tuesday, Jan 10, 2012, 6:30 PM - 8:00 PM Room 18C

This evening session will review the current state-of-the-art in exoplanet technology and its possible implementation in new smaller mission concepts. A central theme in NASAs science planning is the search for habitable worlds and life beyond our Solar System. Although Earth-like planets would not yet be detectable with current technology, starlight suppression now approaches flight readiness for missions that would image exozodiacal dust around nearby stars and characterize Jupiter-like exoplanets. Mission concepts of various scales based on coronagraph and starshades will be described along with their science objectives and technology requirements.

6:30 PM Introduction & Session Overview - Peter Lawson (JPL/Caltech)
6:40 PM Coronagraph Technology
  Probe-class missions - Olivier Guyon (University of Arizona)
  Explorer & Suborbital - Wesley Traub (JPL/Caltech)
7:10 PM Starshade Technology
  Probe-class missions - N. Jeremy Kasdin (Princeton University)
  Explorer & Suborbital - Webster Cash (University of Colorado)
7:40 PM Telescope Technology Design Trades - Rémi Soummer (Space Telescope Science Institute)
7:55 PM Questions
8:00 PM End

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

Contact: `peter.r.lawson@jpl.nasa.gov`

Science with a Wide-field Infrared Telescope in Space *and* The 16th International Conference on Gravitational Microlensing

Caltech

Pasadena, CA, February 13-17, 2012

Please join us for this two-part, week long conference that capitalizes on the synergy between the top ranked space-based recommendation of the Astronomy and Astrophysics Decadal Survey report and the burgeoning field of microlensing. The conference will begin with two and a half days (Feb. 13-15) focusing on the scientific potential of observations with a wide-field infrared survey telescope in space to probe the nature of dark energy, conduct searches for exoplanets using gravitational microlensing, and as a general facility for wide-area surveys. Starting with a joint session on Wednesday afternoon, the second half of the week (Feb. 15-17) will be the 16th in a series of conferences to discuss the latest results from microlensing searches and the perspectives opened by new methodologies and observational and computational facilities.

Important Dates

- Dec, 6, 2011: Abstract submission deadline
- Dec, 13, 2011: Early on-line registration ends
- Jan. 12, 2012: Hotel Registration deadline to be eligible for group rate
- Jan. 20, 2012: Final announcement: decisions on contributed talks; final agenda published
- Jan. 31, 2012: On-line registration closed
- Feb. 13-15, 2012: Science with a Wide-field Infrared Telescope in Space
- Feb. 15-17, 2012: 16th International Conference on Gravitational Microlensing

This meeting is being hosted by NASA, the Infrared Processing and Analysis Center (IPAC) at the California Institute of Technology, the Jet Propulsion Laboratory (JPL), and the Goddard Space Flight Center (GSFC). It will take place at the Pasadena Hilton. Registration, on-line abstract submission, hotel booking links, and more information can be found on the conference website.

Download/Website: `http://ipac.caltech.edu/wfir2012/`

Contact: `wfir2012@ipac.caltech.edu`

5 Announcements

The NASA Exoplanet Archive has launched!

R. L. Akeson
NASA Exoplanet Science Institute/Caltech

Web Service, Released

The NASA Exoplanet Science Institute (NExScI) is pleased to announce the release of the NASA Exoplanet Archive, a new NASA-funded service that will provide long-term data curation and analysis tools to the user community working with exoplanet data–primarily transit data sets from Kepler and CoRoT. The Exoplanet Archive's content includes exoplanet and stellar host properties and Kepler candidate properties presented in interactive tables, including centroiding information from the Kepler pipeline. The service's visualization of Kepler light curves includes interactive, multi-quarter plotting with optional normalization and links to periodogram and phased light curves. Analysis tools include periodogram calculations for both archive and user-supplied data, and transit ephemeris predictions. Additional data content includes contributed exoplanet data from space- and ground-based project.

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

Contact: `exoplanet@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 November 2011. If you see any that we missed, please let us know and we'll include them in the next issue. (Note: we have not sub-divided the entries into categories this month.)

astro-ph/1111.0002: **Kepler 16: A System of Potential Interest to Astrobiologists** by *Martin J. Heath, Laurance R. Doyle*

astro-ph/1111.0031: **The coronal X-ray - age relation and its implications for the evaporation and migration of exoplanets** by *Alan P. Jackson, Timothy A. Davis, Peter J. Wheatley*

astro-ph/1111.0101: **The Late Stages of Protoplanetary Disk Evolution: A Millimeter Survey of Upper Scorpius** by *Geoffrey S. Mathews, Jonathan P. Williams, Francois Menard, et al.*

astro-ph/1111.0297: **On the misalignment of the directly imaged planet β Pictoris b with the system's warped inner disk** by *Rebekah I. Dawson, Ruth A. Murray-Clay, Daniel C. Fabrycky*

astro-ph/1111.0299: **Identifying Non-Resonant Kepler Planetary Systems** by *Dimitri Veras, Eric B. Ford*

astro-ph/1111.1007: **The Pan-Pacific Planet Search. I. A Giant Planet Orbiting 7 CMa** by *R.A. Wittenmyer, M. Endl, L. Wang, et al.*

astro-ph/1111.1076: **Influence of the coorbital resonance on the rotation of the Trojan satellites of Saturn** by *Philippe Robutel, Nicolas Rambaux, Maryame El Moutamid*

astro-ph/1111.1127: **An optimal Earth Trojan asteroid search strategy** by *M. Todd, P. Tanga, D. M. Coward, M. G. Zadnik*

astro-ph/1111.1137: **Kepler Cycle 1 Observations of Low Mass Stars: New Eclipsing Binaries, Single Star Rotation Rates, and the Nature and Frequency of Starspots** by *T. E. Harrison, J. L. Coughlin, N. M. Ule, M. Lopez-Morales*

astro-ph/1111.1168: **The SOPHIE search for northern extrasolar planets. IV. Massive companions in the planet-brown dwarf boundary** by *R. F. Diaz, A. Santerne, J. Sahlmann, et al.*

astro-ph/1111.1286: **The Origin of the Solar System** by *Michael Perryman* astro-ph/1111.1323: **The absorption and emission spectrum of the magnetic Herbig Ae star HD 190073** by *C. R. Cowley, S. Hubrig*

astro-ph/1111.1455: **Characterising the Atmospheres of Transiting Planets with a Dedicated Space Telescope** by *M. Tessenyi, M. Ollivier, G. Tinetti, et al.*

astro-ph/1111.1793: **The Implications of M Dwarf Flares on the Detection and Characterization of Exoplanets at Infrared Wavelengths** by *Benjamin M. Tofflemire, John P. Wisniewski, Adam F. Kowalski, et al.*

astro-ph/1111.1813: **First Keck Nulling Observations of a Young Stellar Object: Probing the Circumstellar Environment of the Herbig Ae star MWC 325** by *S. Ragland, K. Ohnaka, L. Hillenbrand, et al.*

astro-ph/1111.1985: **The fragmentation of protostellar discs: the Hill criterion for spiral arms** by *Patrick D. Rogers, James Wadsley*

astro-ph/1111.2274: **Pulsating stars harbouring planets** by *A. Moya*

astro-ph/1111.2363: **Thermal Emission of WASP-14b Revealed with Three Spitzer Eclipses** by *Jasmina Blecic, Joseph Harrington, Nikku Madhusudhan, Kevin B. Stevenson, et al.*

astro-ph/1111.2549: **Gas modelling in the disc of HD 163296** by *I. Tilling, P. Woitke, G. Meeus, et al.*

astro-ph/1111.2578: **KIC 1571511B: A Benchmark Low-Mass Star In An Eclipsing Binary System In The Kepler Field** by *Aviv Ofir, Davide Gandolfi, Lars Buchhave, et al.*

astro-ph/1111.2612: **Information Content of Exoplanetary Transit Spectra: An Initial Look** by *M.R. Line, X. Zhang, G. Vaisht, et al.*

astro-ph/1111.2628: **Optical to near-infrared transit observations of super-Earth GJ1214b: water-world or mini-Neptune?** by *E.J.W. de Mooij, M. Brogi, R.J. de Kok, et al.*

astro-ph/1111.2872: **Red Dwarf Stars: Ages, Rotation, Magnetic Dynamo Activity and the Habitability of Hosted Planets** by *Scott G. Engle, Edward F. Guinan*

astro-ph/1111.3083: **Revisiting the "radial-drift barrier" of planet formation and its relevance in observed protoplanetary discs** by *Guillaume Laibe, Jean-Franois Gonzalez, Sarah T. Maddison*

astro-ph/1111.3144: **Jupiter - Friend or Foe? IV: The influence of orbital eccentricity and inclination** by *J. Horner, B. W. Jones*

astro-ph/1111.3194: **Improved achromatization of phase mask coronagraphs using colored apodization** by *M. N'Diaye, K. Dohlen, S. Cuevas, et al.*

astro-ph/1111.3495: **Be abundances in cool main-sequence stars with exoplanets** by *E. Delgado Mena, G. Israelian, J. I. Gonzalez Hernandez, N. C. Santos, R. Rebolo*

astro-ph/1111.3682: **Instability-Driven Dynamical Evolution Model of a Primordially 5 Planet Outer Solar System** by *Konstantin Batygin, Michael E. Brown, Hayden Betts*

astro-ph/1111.3746: **A Planetary Companion to the Intermediate-Mass Giant HD 100655** by *Masashi Omiya, Inwoo Han, Hideyuki Izumiura, et al.*

astro-ph/1111.3843: **The dynamics of the elliptic Hill problem : Periodic orbits and stability regions** by *G. Voyatzis, I. Gkolias, H. Varvoglis*

astro-ph/1111.3986: **Planets: Power Laws and Classification** by *Hector Javier Durand-Manterola*

astro-ph/1111.4919: **Overview of Saturn lightning observations** by *G. Fischer, U. A. Dyudina, W. S. Kurth, et al.*

astro-ph/1111.5016: **A High Stellar Obliquity in the WASP-7 Exoplanetary System** by *Simon Albrecht, Joshua N. Winn, R. Paul Butler, et al.*

astro-ph/1111.5019: **The HARPS search for southern extra-solar planets XXXI. The M-dwarf sample** by *X. Bonfils, X. Delfosse, S. Udry, et al.*

astro-ph/1111.5107: **Detection of transit timing variations in excess of one hour in the Kepler multi-planet candidate system KOI 806 with the GTC** by *Brandon Tingley, Enric Palle, Hannu Parviainen, et al.*

astro-ph/1111.5184: **Radio continuum observations of Class I protostellar disks in Taurus: constraining the greybody tail at centimetre wavelengths** by *Anna M. M. Scaife, Jane V. Buckle, Rachael E. Ainsworth, et al.*

astro-ph/1111.5238: **Dead Zones and the Diversity of Exoplanetary Systems** by *Yasuhiro Hasegawa, Ralph E. Pudritz* astro-ph/1111.5375: **The long-term evolution of warped, magnetised discs, and precessing outflows in collapsing pre-stellar cores** by *Dennis F. Duffin, Ralph E. Pudritz, Daniel Seifried, Robi Banerjee, Ralf S. Klessen*

astro-ph/1111.5432: **Refined physical properties of the HAT-P-13 planetary system** by *John Southworth, I. Bruni, L. Mancini, J. Gregorio*

astro-ph/1111.5486: **Pumping the eccentricity of exoplanets by tidal effect** by *Alexandre C. M. Correia, Gwenael Boue, Jacques Laskar*

astro-ph/1111.5478: **Day and night side core cooling of a strongly irradiated giant planet** by *J. Budaj, I. Hubeny, A. Burrows*

astro-ph/1111.5499: **Transition disks: 4 candidates for ongoing giant planet formation in Ophiuchus (Research Note)** by *Mariana Orellana, Lucas. A. Cieza, M. R. Schreiber, et al.*

astro-ph/1110.5567: **The effects of snowlines on C/O in planetary atmospheres** by *Karin I. Oberg, Ruth Murray-Clay, Edwin A. Bergin*

astro-ph/1111.5599: **Transit Model of Planets with Moon and Ring System** by *Luis Ricardo M. Tusnski, Adriana Valio*

astro-ph/1111.5617: **How do Most Planets Form? – Constraints on Disk Instability from Direct Imaging** by *Markus Janson, Mariangela Bonavita, Hubert Klahr, David Lafreniere*

astro-ph/1111.5618: **Binaries Among Debris Disk Stars** by *David R. Rodriguez (UCLA, U. Chile), B. Zuckerman*

astro-ph/1111.5621: **The Flat Transmission Spectrum of the Super-Earth GJ1214b from Wide Field Camera 3 on the Hubble Space Telescope** by *Zachory K. Berta, David Charbonneau, Jean-Michel Desert, et al.*

astro-ph/1111.5858: **Warm Spitzer Photometry of XO-4b, HAT-P-6b and HAT-P-8b** by *Kamen O. Todorov, Drake Deming, Heather A. Knutson, et al.*

astro-ph/1111.6309: **Rocky core solubility in Jupiter and giant exoplanets** by *Hugh F. Wilson, Burkhard Militzer*

astro-ph/1111.7001: **Benchmark cool companions: New ages and abundances for the PZ Tel system** by *James S. Jenkins, Yakiv V. Pavlenko, Oleksiy Ivanyuk, et al.*