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1 Editorial

Welcome to the seventeenth edition of ExoPlanet News, an electronic newsletter reporting the latest developments and research outputs in the field of exoplanets.

Last month saw the launch of the *Kepler* mission and we hope it won't be too long before we start to see the long-anticipated results from that appearing in abstracts in this newsletter.

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> . As ever, we rely on you, the subscribers of the newsletter, to send us your abstracts of recent papers, conference announcements, thesis abstracts, job adverts etc for each edition.

Please send anything relevant to exoplanet@open.ac.uk, and it will appear in the next edition. We plan to send out the next edition at the beginning of May 2009.

Best wishes

Andrew Norton & Glenn White

The Open University

2 Abstracts of refereed papers

Noise properties of the CoRoT data: a planet finding perspective

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Astronomy & Astrophysics, in press (arXiv:0903.1829)

In this short paper, we study the photometric precision of stellar light curves obtained by the CoRoT satellite in its planet finding channel, with a particular emphasis on the timescales characteristic of planetary transits. Together with other articles in the same issue of this journal, it forms an attempt to provide the building blocks for a statistical interpretation of the CoRoT planet and eclipsing binary catch to date.

After pre-processing the light curves so as to minimise long-term variations and outliers, we measure the scatter of the light curves in the first three CoRoT runs lasting more than 1 month, using an iterative non-linear filter to isolate signal on the timescales of interest. The behaviour of the noise on 2 h timescales is well-described by a power-law with index 0.25 in R -magnitude, ranging from 0.1 mmag at $R = 11.5$ to 1 mmag at $R = 16$, which is close to the pre-launch specification, though still a factor 2–3 above the photon noise due to residual jitter noise and hot pixel events. There is evidence for a slight degradation of the performance over time. We find clear evidence for enhanced variability on hours timescales (at the level of 0.5 mmag) in stars identified as likely giants from their R magnitude and $B - V$ colour, which represent approximately 60 and 20% of the observed population in the direction of Aquila and Monoceros respectively. On the other hand, median correlated noise levels over 2 h for dwarf stars are extremely low, reaching 0.05 mmag at the bright end.

Download/Website: <http://uk.arxiv.org/abs/0903.1829>

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A systematic fitting scheme for caustic-crossing microlensing events

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MNRAS, in press (arXiv:0901.1285)

We outline a method for fitting binary-lens caustic-crossing microlensing events based on the alternative model parameterisation proposed and detailed in Cassan (2008). As an illustration of our methodology, we present an analysis of OGLE-2007-BLG-472, a double-peaked Galactic microlensing event with a source crossing the whole caustic structure in less than three days. In order to identify all possible models we conduct an extensive search of the parameter space, followed by a refinement of the parameters with a Markov Chain-Monte Carlo algorithm. We find a number of low- χ^2 regions in the parameter space, which lead to several distinct competitive best models. We examine the parameters for each of them, and estimate their physical properties. We find that our fitting strategy locates several minima that are difficult to find with other modelling strategies and is therefore a more appropriate method to fit this type of event.

Download/Website: <http://arxiv.org/abs/0901.1285>

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The Lupus Transit Survey for Hot Jupiters: Results and Lessons

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Astronomical Journal, in press (arXiv:0903.5121v1)

We present the results of a deep, wide-field transit survey targeting “Hot Jupiter” planets in the Lupus region of the Galactic plane conducted over 53 nights concentrated in two epochs separated by a year. Using the Australian National University 40-inch telescope at Siding Spring Observatory (SSO), the survey covered a 0.66 deg^2 region close to the Galactic Plane ($b = 11^\circ$) and monitored a total of 110,372 stars ($15.0 < V < 22.0$). Using difference imaging photometry, 16,134 light curves with a photometric precision of $\sigma < 0.025 \text{ mag}$ were obtained. These light curves were searched for transits, and four candidates were detected that displayed low-amplitude variability consistent with a transiting giant planet. Further investigations, including spectral typing and radial velocity measurements for some candidates, revealed that of the four, one is a true planetary companion (Lupus-TR-3), two are blended systems (Lupus-TR-1 and 4), and one is a binary (Lupus-TR-2). The results of this successful survey are instructive for optimizing the observational strategy and follow-up procedure for deep searches for transiting planets, including an upcoming survey using the SkyMapper telescope at SSO.

Download/Website: <http://arxiv.org/abs/0903.5121>

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Cryptic photosynthesis, Extrasolar planetary oxygen without a surface biological signature

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Astrobiology, in press (arXiv:0809.3990)

On the Earth, photosynthetic organisms are responsible for the production of virtually all of the oxygen in the atmosphere. On the land, vegetation reflects in the visible, leading to a red edge that developed about 450 Myr ago and has been proposed as a biosignature for life on extrasolar planets. However, in many regions of the Earth, and particularly where surface conditions are extreme, for example in hot and cold deserts, photosynthetic organisms can be driven into and under substrates where light is still sufficient for photosynthesis. These communities exhibit no detectable surface spectral signature to indicate life. The same is true of the assemblages of photosynthetic organisms at more than a few metres depth in water bodies. These communities are widespread and dominate local photosynthetic productivity. We review known cryptic photosynthetic communities and their productivity. We link geomicrobiology with observational astronomy by calculating the disk-averaged spectra of cryptic habitats and identifying detectable features on an exoplanet dominated by such a biota. The hypothetical cryptic photosynthesis worlds discussed here are Earth-analogs that show detectable atmospheric biomarkers like our own planet, but do not exhibit a discernable biological surface feature in the disc-averaged spectrum.

Download/Website: <http://xxx.lanl.gov/abs/0809.3990>

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Transits of Earth-like Planets

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Astrophysical Journal, in press (arXiv:0903.3371)

Transmission spectroscopy of Earth-like exoplanets is a potential tool for habitability screening. Transiting planets are present-day "Rosetta Stones" for understanding extrasolar planets because they offer the possibility to characterize giant planet atmospheres and should provide an access to biomarkers in the atmospheres of Earth-like exoplanets, once they are detected. Using the Earth itself as a proxy we show the potential and limits of the transiting technique to detect biomarkers on an Earth-analog exoplanet in transit. We quantify the Earth's cross section as a function of wavelength, and show the effect of each atmospheric species, aerosol, and Rayleigh scattering. Clouds do not significantly affect this picture because the opacity of the lower atmosphere from aerosol and Rayleigh losses dominates over cloud losses. We calculate the optimum signal-to-noise ratio for spectral features in the primary eclipse spectrum of an Earth-like exoplanet around a Sun-like star and also M stars, for a 6.5-m telescope in space. We find that the signal to noise values for all important spectral features are on the order of unity or less per transit - except for the closest stars - making it difficult to detect such features in one single transit, and implying that co-adding of many transits will be essential.

Download/Website: <http://arXiv.org/abs/0903.3371>

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Target star catalog for Darwin: Nearby Stellar sample for a search for terrestrial planets

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Astronomy and Space Science, in press (arXiv:0810.5138)

In order to evaluate and develop mission concepts for a search for Terrestrial Exoplanets, we have prepared a list of potential target systems. In this paper we present and discuss the criteria for selecting potential target stars suitable for the search for Earth like planets, with a special emphasis on the aspects of the habitable zone for these stellar systems. Planets found within these zones would be potentially able to host complex life forms. We derive a final target star sample of potential target stars, the Darwin All Sky Star Catalog (DASSC). The DASSC contains a sample of 2303 identified objects of which 284 are F, 464 G, 883 K, 615 M type stars and 57 stars without B-V index. Of these objects 949 objects are flagged in the DASSC as multiple systems, resulting in 1229 single main sequence stars of which 107 are F, 235 are G, 536 are K, and 351 are M type. We derive configuration dependent subcatalogs from the DASSC for two technical designs, the initial baseline design and the advanced Emma design as well as a catalog using an inner working angle cut off. We discuss the selection criteria, derived parameters and completeness of sample for different classes of stars.

Download/Website: <http://xxx.lanl.gov/abs/0810.5138>

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Stellar Aspects of Habitability - Characterizing Target Stars for Terrestrial Planet Search Missions

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Astrobiology, in press

In this paper we present and discuss the criteria for selecting potential target stars suitable for the search for Earth like planets, with a special emphasis on the stellar aspects of habitability. Missions that search for terrestrial exoplanets will explore the presence and habitability of Earth-like exoplanets around several hundred nearby stars, mainly F, G, K, and M stars. The evaluation of the list of potential target systems in order to develop mission concepts for a search for Terrestrial Exoplanets is essential. Using the Darwin All Sky Star Catalogue (DASSC), we discuss the selection criteria, configuration dependent sub-catalogues and the implication of stellar activity for habitability.

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Characterizing Habitable extrasolar planets using Spectral Fingerprints

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CRAS, in press

The detection and of Earth-like planet is approaching rapidly thanks to radial velocity surveys (HARPS), transit searches (Corot, Kepler). Space observatories dedicated to their characterization are already in development phase (James Webb Space Telescope, Extremely Large Telescope (ELT, ESO), Darwin, TPF, NWO). In this paper we discuss how we can read a planets spectrum to assess its habitability and search for the signatures of a biosphere. Identifying signs of life implies to gather as much information as possible in order to understand how the observed atmosphere physically and chemically works.

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Stability of additional planets in and around the habitable zone of the HD 47186 Planetary System

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Astrophysical Journal letters, in press (arXiv:0903.3597)

We study the dynamical stability of an additional, potentially habitable planet in the HD 47186 planetary system. Two planets are currently known in this system: a “hot Neptune” with a period of 4.08 days and a Saturn-mass planet with a period of 3.7 years. Here we consider the possibility that one or more undetected planets exist between the two known planets and possibly within the habitable zone in this system. Given the relatively low masses of the known planets, additional planets could have masses $\lesssim 10 M_{\oplus}$, and hence be terrestrial-like and further improving potential habitability. We perform N -body simulations to identify the stable zone between planets b and c and find that much of the inner habitable zone can harbor a $10 M_{\oplus}$ planet. With the current radial velocity threshold of ~ 1 m/s, an additional planet should be detectable if it lies at the inner edge of the habitable zone at 0.8 AU. We also show that the stable zone could contain two additional planets of $10 M_{\oplus}$ each if their eccentricities are lower than ~ 0.3 .

Download/Website: <http://arxiv.org/abs/0903.3597>

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Formation and Detection of Earth-Mass Planets around Low-Mass Stars

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Icarus, in press (arXiv:0903.2452)

We investigate an in-situ formation scenario for Earth-mass terrestrial planets in short-period, potentially habitable orbits around low-mass stars ($M_{star} < 0.3M_{\odot}$). We then investigate the feasibility of detecting these Earth-sized planets. Our simulations of terrestrial planet formation follow the growth of planetary embryos in an annular region around a fiducial M7 primary. Our simulations couple a semi-analytic model to a full N -body integration to follow the growth from $\sim 3 \times 10^{21}$ g to the final planetary system configurations that generally consist of 3–5 planets with masses of order $0.1 - 1.0 M_{\oplus}$ in or near the habitable zone of the star. To obtain a concrete estimate of the detectability of the planets arising in our simulations, we present a detailed Monte-Carlo transit detection simulation. We find that detection of $1R_{\oplus}$ planets around the local M-dwarfs is challenging for a 1m class ground-based photometric search, but that detection of planets of larger radius is a distinct possibility. The detection of Earth-sized planets is straightforward, however, with an all-sky survey by a low-cost satellite mission. Given a reduced correlated noise level of 0.45 mmag and an intermediate planetary ice-mass fraction of planets orbiting a target list drawn from the nearest late-type M dwarfs, a ground-based photometric search could detect, on average, 0.8 of these planets with an extended search. A space-based photometric search (similar to the TESS mission) should discover ~ 17 of these Earth-sized planets during its two year survey, with an assumed occurrence fraction of 28%.

Download/Website: <http://arxiv.org/abs/0903.2452>

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Activity-induced radial velocity jitter in a flaring M dwarf

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Astronomy & Astrophysics, in press (arXiv:0903.2661)

We investigate the effect of stellar activity and flares on short-term radial velocity measurements in the mid-M flare star CN Leo. Radial velocity variations are calculated from 181 UVES spectra obtained during three nights. We searched for spectral orders that contain very few atmospheric absorption lines and calibrated them against the telluric A-band from O₂ in the Earth's atmosphere. One giant flare occurred during our observations, which has a very strong effect on radial velocity. The apparent radial velocity shift due to the flare is several hundred m s⁻¹ and clearly correlated with H α emission. Outside the flare, only spectral orders containing the most prominent emission lines of H, He, and Ca show a correlation to chromospheric activity together with a radial velocity jitter exceeding a few 10 m s⁻¹. We identify a number of spectral orders that are free of strong emission lines and show no flaring-related radial velocity jitter, although flares occurred as strong as 0.4 dex in normalized H α luminosity. The mean radial velocity jitter due to moderate flaring is less than 10 m s⁻¹. Strong flares are easily recognized directly in the spectra and should be neglected for planet searches.

Download/Website: <http://arxiv.org/abs/0903.2661>

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The low density transiting exoplanet WASP-15b

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Astronomical Journal, in press (arXiv:0902.2651)

We report the discovery of a low-density exoplanet transiting an 11th magnitude star in the Southern hemisphere. WASP-15b, which orbits its host star with a period $P = 3.7520656 \pm 0.0000028$ d has a mass $M_p = 0.542 \pm 0.050 M_J$ and radius $R_p = 1.428 \pm 0.077 R_J$, and is therefore the one of least dense transiting exoplanets so far discovered ($\rho_p = 0.247 \pm 0.035$ g cm⁻³). An analysis of the spectrum of the host star shows it to be of spectral type around F5, with an effective temperature $T_{\text{eff}} = 6300 \pm 100$ K and $[\text{Fe}/\text{H}] = -0.17 \pm 0.11$.

Download/Website: <http://arxiv.org/abs/0902.2651>

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3 Conference announcements

ASTROCAM School: "Young Stellar Objects: from cool stars to exoplanets"

David Montes

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El Escorial, Madrid, Spain, 29 June – 3 July 2009

ASTROCAM, the Astrophysical Network of the Comunidad de Madrid (<http://www.astrocam.es>) formed by researchers from CSIC, UCM, UAM, ESAC, UPM and UEM, with the participation of the local companies DEIMOS, GMV, SERCO, VEGA and INSA, is pleased to announce the organisation of an international School on "Young Stellar Objects: from cool stars to exoplanets" to be held at the Real Centro Universitario Escorial-Maria Cristina, sited at San Lorenzo de El Escorial, Madrid, Spain, on 29 June - 3 July 2009.

The school intends to offer an introduction to the theme of young stellar and substellar objects and will include lectures on young stars and angular momentum evolution, young stars in associations and moving groups, brown dwarfs and isolated planetary mass objects, and exoplanets of young stars. The lectures will cover theoretical and observational topics including practical exercises on real data.

Pre-registration: The number of attendants will be limited to 30 Master and PhD students and recent post-docs. All the interested students should fill the pre-registration form (deadline 30 April 2009). Positions will be filled prioritizing Master and PhD students and on the basis of "first arrived first served" approach. The final list of accepted students will be published at the beginning of May.

Financial support: There is no registration-fee. The accommodation expenses for all the students at the Real Centro Universitario Escorial-Maria Cristina will be covered by the organization of the school. No financial support is available for the travel expenses.

Scientific Organising Committee: - D. Montes (chair), J.A. Caballero, E. de Castro, M. Cornide, M.J. Fernández-Figueroa, J. López Santiago (UCM, Fis.), A.I. Gómez de Castro (UCM, Mat.), E.L. Martín (IAC), B. Montesinos (LAEX-CAB).

Local Organising Committee: J.A. Caballero (chair), J. López Santiago, R.M. Martínez Arniz, D. Montes (UCM, Fis.), M. Castellanos (ASTROCAM Manager).

Detailed information of the School including preliminary program and pre-registration instructions can be found in this web page: <http://www.astrocam.es/school09/>

Contact: astrocam_school09@astrax.fis.ucm.es

Pathways towards habitable planets

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² Institut de Ciències de l'Espai, CSIC-IEEC, Spain

Barcelona, Spain, 14 – 18 September, 2009

Registration is now open for the Pathways Towards Habitable Planets conference to be held next September 14–18 in Barcelona, Spain.

One of the most important scientific challenges for the 21st century is the search of habitable worlds around other stars, and the characterization of their atmospheres with the goal of detecting signs of biological activity. This is a long-term, interdisciplinary endeavor, engaging astrophysicists, biologists, planetary scientists, and instrument scientists. Eventually, space missions will address those questions, however today we need to start making intermediate steps. The aim of this conference is to help integrate the prospective efforts in Europe and in the US, build a community around this theme, and bring together several pathways towards that final goal. The conference will include introductory lectures, invited talks, contributed talks and posters on the major scientific topics listed below, as well as public talks. The conference is sponsored in part by the Spanish CSIC, the Catalan IEEC, the NASA ExoPlanet Science Institute, and the Blue Dots initiative.

Important dates:

- May 15th: deadline for requesting financial support
- June 15th: deadline for early registration and abstract submission
- July 15th: publication of the final programme in the web
- July 15th: deadline for full refund (except for 15 euro handling fee)
- September 14th–18th: conference
- November 15th: deadline for submission of proceedings
- Spring 2010: distribution of proceedings

We encourage you to visit the conference website for further details, to submit your abstract, and register for the meeting.

Announcement of opportunity for satellite meetings

The venue chosen for the Pathways conference (CosmoCaixa science museum) makes it possible to hold a special session on Monday, Tuesday and Wednesday at 5pm after the end of the main meeting. One session can be held in the main auditorium (312 seats) and two smaller rooms (60 seats) are also available in parallel. The nominal duration of a special session is 90 minutes.

We therefore welcome proposals to hold satellite meetings of specific interest in conjunction with the Pathways conference. The meetings can deal with a particular project or technique, explore in more depth a Pathways related science topic, or cover anything else that is relevant. They can take the form of a workshop, a panel, an open discussion, or any other appropriate format.

Organizers of the satellite meetings will benefit from the full exposure and logistics of the Pathways conference (except for the publication of proceedings), while maintaining editorial control on the meeting. Participants will have to register to the main conference even if they only attend the special sessions.

To propose a satellite meeting send an email before May 20th to soc@pathways2009.net with the following information:

- Name and contact of the main organizer
- Title and short rationale
- Tentative list of main speakers or participants
- Format description: number of sessions requested, room size requested, special needs (in which case a prior inquiry to establish feasibility is recommended)

The satellite meetings will be announced by June 5th.

Download/Website: <http://www.pathways2009.net>

Contact: soc@pathways2009.net

4 Jobs and positions

Postdoctoral position for transit photometry of extrasolar planets with the space mission Corot

Pascal Bordeé

Universite Paris-Sud 11, Institut d'astrophysique spatiale, Batiment 121, 91405 Orsay CEDEX, France

Universite Paris-Sud 11, Institut d'astrophysique spatiale, send applications by 1st June 2009

We seek a postdoctoral researcher to contribute to the detection and analysis of exoplanet transits in the photometric light curves obtained by the space mission Corot. The successful applicant will also be encouraged to devote as much as fifty percent of his/her time to Corot-related exoplanet science, such as studies on dynamics, atmospheres, and internal structures of newly-found planets. He/she will join the exoplanet group at Institut d'astrophysique spatiale (IAS), which includes Drs. Alain Leger, Marc Ollivier, and Pascal Borde. IAS hosts the Corot archive and is responsible for the delivery of Corot data to the co-investigators of the mission.

Applicants with a background in observational studies of extrasolar planets are particularly encouraged to apply; strong applicants from other areas will be considered. Applicants must hold, or expect to hold before taking up the position, a PhD in astrophysics or another relevant discipline.

A CV, list of publications, and a brief description of research interests and accomplishments should be submitted electronically to Dr. Pascal Borde (pascal.borde@u-psud.fr). Applicants should additionally arrange for three letters of recommendation to be sent to the same address. Applications received by June 1st, 2009, will receive full consideration, but further applications will be considered until the position is filled.

This is a fixed-term appointment for 2 years, starting between September 2009 and January 2010. The annual salary will be in the range 22800-24600 euros (after tax), depending on qualifications and experience.

Download/Website: <http://www.ias.u-psud.fr>

Contact: pascal.borde@u-psud.fr

Postdoctoral Research Scientist

Inga Kamp

Kapteyn Astronomical Institute, PO Box 800, 9700 AV Groningen, The Netherlands

Groningen, The Netherlands, send applications before June 2, 2009

The Kapteyn Astronomical Institute in Groningen, The Netherlands, invites applications for a postdoctoral research scientist.

The successful candidate will mainly work with Dr. Inga Kamp on Herschel/PACS data obtained from the Open Time Key Program GASPS (Gas Evolution in Protoplanetary Systems, PI: Dent). He or she is expected to actively participate in the PACS data analysis and to carry out research on protoplanetary disks. The candidate will be given the opportunity to pursue independent astrophysical research and to collaborate with other Herschel Key Programs. The postdoctoral research scientist will encounter a stimulating scientific environment being in the same building as SRON, the PI institute and Instrument Control Center for the HIFI instrument. Staff from the Kapteyn Astronomical Institute and SRON are involved in many galactic and extragalactic Herschel Key Programs such as WISH (Water In Star-forming regions with Herschel, PI: van Dishoeck), HS3F ("HIFI Spectral Surveys of Star Forming Regions", PI: Ceccarelli), WADI (The warm and dense ISM, PI: Ossenkopf), HEXOS (Herschel/HIFI Observations of EXtraOrdinary Sources: The Orion and Sagittarius B2 Starforming Regions, PI: Bergin), HERCULES ("A Herschel survey of molecular lines in (U)LIRGs: physical conditions, the nature of the power source, and a benchmark for high-z observations", PI: van der Werf). Thus, there is an exciting range of opportunities to establish new collaborations.

Interested applicants should have a PhD in astrophysics or physics and proven experience in far-infrared observations, including analysis of line data and good knowledge of (molecular) spectroscopy. The ability to work in an international team and a good command of the English language are essential. Experience with the Herschel/PACS instrument and knowledge of the Python/Jython scripting language are considered an asset.

The University of Groningen offers a salary dependent on qualifications and work experience up to a maximum of EUR 4374 (scale 11) gross per month for a full-time position. The duration of the contract is 2 years with a possible extension to a third year.

Interested candidates should send application material, including a curriculum vitae, a brief statement of past research and future plans, and arrange for three letters of reference to be sent to Dr. Inga Kamp, Kapteyn Astronomical Institute, P.O. Box 800, 9700 AV Groningen, The Netherlands (E-mail address: kamp@astro.rug.nl). Selection of candidates will start June 2, 2009, and will continue until the position is filled.

Download/Website: <http://www.astro.rug.nl>

Contact: kamp@astro.rug.nl

5 As seen on astro-ph

The following list contains all the entries relating to exoplanets that we spotted on astro-ph during March 2009. (The first entry is actually one we missed in January, which we are pleased to include here after the authors pointed it out to us.) If you spot any that we missed, please let us know and we'll include them in the next issue. And of course, the best way to ensure we include your paper is to send us the abstract!

Exoplanets

astro-ph/0901.0532: **The DODO Survey II: A Gemini Direct Imaging Search for Substellar and Planetary Mass Companions around Nearby Equatorial and Northern Hemisphere White Dwarfs** by *E. Hogan, M. R. Burleigh, F. J. Clarke*

- astro-ph/0903.0325: **Characterization of CoRoT target fields with BEST: Identification of periodic variable stars in the LRa1 field** by *P. Kabath, P. Eigmüller, A. Erikson et al*
- astro-ph/0903.0598: **X-ray Studies of Planetary Systems: An Astro2010 Decadal Survey White Paper** by *Eric Feigelson, Jeremy Drake, Ronald Elsner et al*
- astro-ph/0903.0656: **The space distribution of nearby star-forming regions** by *Laurent Loinard, Luis F. Rodriguez, Amy J. Mioduszewski*
- astro-ph/0903.0763: **Tidal Decay and circularization of the orbits of Short-Period planets** by *Adrian Rodriguez & Sylvio Ferraz-Mello*
- astro-ph/0903.0860: **NICMOS Photometry of the Unusual Dwarf Planet Haumea and its Satellites** by *W. C. Fraser & M. E. Brown*
- astro-ph/0903.0873: **Magnetospheric Emission from Extrasolar Planets** by *J. Lazio, T. Bastian, G. Bryden et al*
- astro-ph/0903.0880: **The Demographics of Extrasolar Planets Beyond the Snow Line with Ground-based Microlensing Surveys** by *B. Scott Gaudi, J.-P. Beaulieu, David P. Bennett et al*
- astro-ph/0903.0923: **Considerations on the magnitude distributions of the Kuiper belt and of the Jupiter Trojans** by *Morbidelli Alessandro, Harold F. Levison, William Bottke et al*
- astro-ph/0903.1101: **Is Beta Pic b the transiting planet of November 1981?** by *A. Lecavelier des Etangs & A. Vidal-Madjar*
- astro-ph/0903.1390: **The Brown Dwarf-Exoplanet Connection** by *Adam J. Burgasser*
- astro-ph/0903.1782: **Evidence for a lost population of close-in exoplanets** by *Timothy A. Davis & Peter J. Wheatley*
- astro-ph/0903.1845: **An analysis of the transit times of CoRoT-Exo-1b** by *Jacob L. Bean*
- astro-ph/0903.1919: **H band Image of a Planetary Companion around HR 8799 in 2002** by *Misato Fukagawa, Yoichi Itoh, Motohide Tamura et al*
- astro-ph/0903.2217: **On the possibility of detecting extrasolar planets' atmospheres with the Rossiter-McLaughlin-effect** by *S. Dreizler, A. Reiners, D. Homeier et al*
- astro-ph/0903.1997: **Heavy Element Enrichment of a Jupiter-mass Protoplanet as a Function of Orbital Location** by *R. Helled & G. Schubert*
- astro-ph/0903.2334: **Habitable Zones for Earth-mass Planets in Multiple Planetary Systems** by *Ji Jianghui, Liu Lin, H. Kinoshita et al*
- astro-ph/0903.2505: **The NASA/IPAC/NEoS Star and Exoplanet Database** by *G. B. Berriman, B. Ali, R. Baker et al*
- astro-ph/0903.2660: **Unstable Planetary Systems Emerging Out Of Gas Disks** by *Soko Matsumura, Edward W. Thommes, Sourav Chatterjee et al*
- astro-ph/0903.2666: **The Last Gasp of Gas Giant Planet Formation: A Spitzer Study of the 5 Myr-old Cluster NGC 2362** by *Thayne Currie, Charles J. Lada, Peter Plavchan et al*
- astro-ph/0903.2687: **The Transit Light Curve Project. XII. Six Transits of the Exoplanet XO-2b** by *Jose M. Fernandez, Matthew J. Holman, Joshua N. Winn et al*
- astro-ph/0903.3059: **International Year of Astronomy Invited Review on Exoplanets** by *John A. Johnson*
- astro-ph/0903.3305: **Jupiter - friend or foe? II: the Centaurs** by *Jonti Horner & Barrie W Jones*
- astro-ph/0903.3371: **Transits of Earth-Like Planets** by *L. Kaltenegger & W.A. Traub*
- astro-ph/0903.3405: **Search for Carbon Monoxide in the atmosphere of the Transiting Exoplanet HD189733b** by *Jean-Michel Desert, Alain Lecavelier des Etangs, Guillaume Hebrard et al*
- astro-ph/0903.3593: **Planetary companion candidates around the K giant stars 42 Dra and HD 139357** by *M.P. Doellinger, A.P. Hatzes, L. Pasquini et al*
- astro-ph/0903.3597: **Stability of additional planets in and around the habitable zone of the HD 47186 Planetary System** by *Ravi Kumar Kopparapu, Sean N. Raymond & Rory Barnes*
- astro-ph/0903.5475: **New seismic analysis of the exoplanet-host star Mu Arae** by *M. Soriano & S. Vauclair*

Disks

- astro-ph/0903.0440: **HD 100453: A Link Between Gas-Rich Protoplanetary Disks and Gas-Poor Debris Disks** by *K. A. Collins, C. A. Grady, K. Hamaguchi et al*
- astro-ph/0903.0480: **Observational evidence for dust growth in proto-planetary discs** by *Gwendolyn Meeus*
- astro-ph/0903.2354: **Planetesimals to Protoplanets II: Effect of Debris on Terrestrial Planet Formation** by *Z. M. Leinhardt, D. C. Richardson, G. Lufkin et al*
- astro-ph/0903.2660: **Unstable Planetary Systems Emerging Out Of Gas Disks** by *Soko Matsumura, Edward W. Thommes, Sourav Chat et al*
- astro-ph/0903.3801: **Anachronistic Grain Growth and Global Structure of the Protoplanetary Disk Associated with the Mature Classical T Tauri Star, PDS 66** by *Stephanie R. Cortes, Michael R. Meyer, John M. Carpenter et al*
- astro-ph/0903.4193: **The low level of debris disk activity at the time of the Late Heavy Bombardment: a Spitzer study of Praesepe** by *A. Gaspar, G. H. Rieke, K. Y. L. Su et al*
- astro-ph/0903.4455: **A Spatially Resolved Inner Hole in the Disk around GM Aurigae** by *A. Meredith Hughes, Sean M. Andrews, Catherine Esp et al*
- astro-ph/0903.4580: **Protostellar collapse: rotation and disk formation** by *W. M. Tscharnuter, J. Schonke, H.-P. Gail et al*
- astro-ph/0903.4921: **The All Sky Automated Survey. The Catalog of Variable Stars in the Kepler Field of View** by *A. Pigulski, G. Pojmanski, B. Pilecki et al*
- astro-ph/0903.5121: **The Lupus Transit Survey For Hot Jupiters: Results and Lessons** by *D. D. R. Bayliss, D. T. F. Weldrake, P. D. Sackett et al*

Instrumentation and Techniques

- astro-ph/0903.181: **MARVELS: Revealing the Formation and Dynamical Evolution of Giant Planet Systems** by *Jian Ge, Daniel Eisenstein, B. Scott Gaudi et al*
- astro-ph/0903.0652: **A Search for Multi-Planet Systems Using the Hobby-Eberly Telescope** by *Robert A. Wittenmyer, Michael Endl, William D. Cochran et al*
- astro-ph/0903.1165: **Application of the Trend Filtering Algorithm on the MACHO Database** by *J. Szulagyi, G. Kovacs & D. L. Welch*
- astro-ph/0903.1829: **Noise properties of the CoRoT data: a planet-finding perspective** by *S. Aigrain, F. Pont, F. Fressin et al*
- astro-ph/0903.2139: **High-precision photometry by telescope defocussing. I. The transiting planetary system WASP-5** by *John Southworth, T. C. Hinse, U. G. Joergensen et al*
- astro-ph/0903.5001: **Phase-Induced Amplitude Apodization on centrally obscured pupils: design and first laboratory demonstration for the Subaru Telescope pupil** by *Julien Lozi, Frantz Martinache & Olivier Guyon*
- astro-ph/0903.5304: **Planetesimal Disk Microlensing** by *Kevin Heng & Charles R. Keeton*