ExoPlanet News
An Electronic Newsletter

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Contents

1 Editorial

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

This week has been a busy one for UK Exoplanet research as we presented a major public outreach exhibit at this year's Royal Society Summer Science Exhibition in London (see http://www.summerscience.org.uk). The exoplanet exhibit entitled "Is there anybody out there? Looking for new worlds" was conceived by our colleague Carole Haswell of the Open University and put together by her and me (Andrew Norton), Martin Dominik & Keith Horne (St. Andrews), David Wilson (Keele), Hugh Jones (Hertfordshire), Paul Roche (Faulkes Telescope) and Nick Rattenbury (Manchester).

At the exhibit, we showed live microlensing data from Robonet as well as a live link-up with the transit detection telescope SuperWASP South. The three main methods used to find exoplanets (which we nick-named "wobbles", "winks" and "blips" for the general public) were demonstrated using games and interactive displays, and astronomers were on-hand to answer questions. The exhibition is attended by about 5000 people each year, and plenty of them were interested enough in exoplanets to stop and find out more from us. Two black-tie evening soirees were also held, attended by the movers and shakers of UK science and government. So hopefully the cause of exoplanet research will have been advanced by the event.

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 which we plan to send out close to the beginning of each calendar month.

Best wishes
Andrew Norton & Glenn White
The Open University

2 Abstracts of refereed papers

Evolution of Migrating Planets Undergoing Gas Accretion

G. D'Angelo[1], *S.H. Lubow*[2]
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Astrophysical Journal, in press (arXiv:0806.1771)

We analyze the orbital and mass evolution of planets that undergo run-away gas accretion by means of two- and three-dimensional hydrodynamic simulations. The disk torque distribution per unit disk mass as a function of radius provides an important diagnostic for the nature of the disk-planet interactions. We first consider torque distributions for nonmigrating planets of fixed mass and show that there is general agreement with the expectations of resonance theory. We then present results of simulations for mass-gaining, migrating planets. For planets with an initial mass of 5 Earth masses ($M_{\rm E}$), which are embedded in disks with standard parameters and which undergo run-away gas accretion to one Jupiter mass ($M_{\rm J}$), the torque distributions per unit disk mass are largely unaffected by migration and accretion for a given planet mass. The migration rates for these planets are in agreement with the predictions of

the standard theory for planet migration (Type I and Type II migration). The planet mass growth occurs through gas capture within the planet's Bondi radius at lower planet masses, the Hill radius at intermediate planet masses, and through reduced accretion at higher planet masses due to gap formation. During run-away mass growth, a planet migrates inwards by only about 20% in radius before achieving a mass of $\sim 1\,M_{\rm J}$. For the above models, we find no evidence of fast migration driven by coorbital torques, known as Type III migration. We do find evidence of Type III migration for a fixed mass planet of Saturn's mass that is immersed in a cold and massive disk. In this case the planet migration is assumed to begin before gap formation completes. The migration is understood through a model in which the torque is due to an asymmetry in density between trapped gas on the leading side of the planet and ambient gas on the trailing side of the planet.

Download/Website: `http://arxiv.org/abs/0806.1771`

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Misaligned spin-orbit in the XO-3 planetary system?

G. Hébrard, et al.
Institut d'Astrophysique de Paris

Astronomy & Astrophysics, in press (arXiv:0806.0719)

The transiting extrasolar planet XO-3b is remarkable, with a high mass and eccentric orbit. The unusual characteristics make it interesting to test whether its orbital plane is parallel to the equator of its host star, as it is observed for other transiting planets. We performed radial velocity measurements of XO-3 with the SOPHIE spectrograph at the 1.93-m telescope of Haute-Provence Observatory during a planetary transit, and at other orbital phases. This allowed us to observe the Rossiter-McLaughlin effect and, together with a new analysis of the transit light curve, to refine the parameters of the planet. The unusual shape of the radial velocity anomaly during the transit provides a hint for a nearly transverse Rossiter-McLaughlin effect. The sky-projected angle between the planetary orbital axis and the stellar rotation axis should be lambda = 70 +/- 15 degrees to be compatible with our observations. This suggests that some close-in planets might result from gravitational interaction between planets and/or stars rather than migration due to interaction with the accretion disk. This surprising result requires confirmation by additional observations, especially at lower airmass, to fully exclude the possibility that the signal is due to systematic effects.

Download/Website: `http://fr.arXiv.org/abs/0806.0719`

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Measurement of the Spin-Orbit Angle of Exoplanet HAT-P-1b

John Asher Johnson[2,3], *Joshua N. Winn*[4], *Norio Narita*[5], *Keigo Enya*[6], *Peter K. G. Williams*[2], *Geoffrey W. Marcy*[2], *Bun'ei Sato*[7], *Yasuhiro Ohta*[8], *Atsushi Taruya*[8], *Yasushi Suto*[8], *Edwin L. Turner*[9], *Gaspar Bakos*[10], *R. Paul Butler*[11], *Steven S. Vogt*[12], *Wako Aoki*[5], *Motohide Tamura*[5], *Toru Yamada*[13], *Yuzuru Yoshii*[14], *Marton Hidas*[15]

[1] Based on observations obtained at the Keck Observatory, which is operated as a scientific partnership among the California Institute of Technology, the University of California, and the National Aeronautics and Space Administration; the Subaru Telescope, which is operated by the National Astronomical Observatory of Japan; and the Lick Observatory, which is operated by the University of California.

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Astrophysical Journal, in press

We present new spectroscopic and photometric observations of the HAT-P-1 planetary system. Spectra obtained during three transits exhibit the Rossiter-McLaughlin effect, allowing us to measure the angle between the sky projections of the stellar spin axis and orbit normal, $\lambda = 3.7 \pm 2.1$ degrees. The small value of λ for this and other systems suggests that the dominant planet migration mechanism preserves spin-orbit alignment. Using two new transit light curves, we refine the transit ephemeris and reduce the uncertainty in the orbital period by an order of magnitude. We find a upper limit on the orbital eccentricity of 0.067, with 99% confidence, by combining our new radial-velocity measurements with those obtained previously.

Download/Website: `http://lanl.arxiv.org/abs/0806.1734`

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Collisional and Thermal Emission Models of Debris Disks: Towards Planetesimal Population Properties

Alexander V. Krivov, Sebastian Müller, Torsten Löhne, Harald Mutschke
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Astrophysical Journal, in press (arXiv:0807.0603)

Debris disks around main-sequence stars are believed to derive from planetesimal populations that have accreted at early epochs and survived possible planet formation processes. While debris disks must contain solids in a broad range of sizes — from big planetesimals down to tiny dust grains — debris disk observations are only sensitive to the dust end of the size distribution. Collisional models of debris disks are needed to "climb up" the ladder of the collisional cascade, from dust towards parent bodies, representing the main mass reservoir of the disks. We have used our collisional code to generate five disks around a sun-like star, assuming planetesimal belts at 3, 10, 30, 100, and 200 AU with 10 times the Edgeworth-Kuiper-belt mass density, and to evolve them for 10 Gyr. Along with an appropriate scaling rule, this effectively yields a three-parametric set of reference disks (initial mass, location of planetesimal belt, age). For all the disks, we have generated spectral energy distributions (SEDs), assuming homogeneous spherical astrosilicate dust grains. A comparison between generated and actually observed SEDs yields estimates of planetesimal properties (location, total mass etc.). As a test and a first application of this approach, we have selected five disks around sun-like stars with well-known SEDs. In four cases, we have reproduced the data with a linear combination of two disks from the grid (an "asteroid belt" at 3 AU and an outer "Kuiper belt"); in one case a single, outer component was sufficient. The outer components are compatible with "large Kuiper belts" of 0.2–50 earth masses (in the bodies up to 100 km in size) with radii of 100–200 AU.

Download/Website: `http://arxiv.org/abs/0807.0603`

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A Pathfinder Instrument for Precision Radial Velocities in the Near-Infrared

L.W. Ramsey[1], *J. Barnes*[2], *S.L. Redman*[1], *H.R.A. Jones*[2], *A. Wolszczan*[1], *S. Bongiorno*[1], *L. Engel*[1], *and J. Jenkins*[1]

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Publications of the Astronomical Society of the Pacific, in press (arXiv/0806.3749)

We have designed and tested an in-plane échelle spectrograph configured to investigate precision radial velocities from ground-based near-infrared observations. The spectrograph operates across the spectral range of $0.9 - 1.7$ mm at a spectral resolution of $R = 50,000$, and uses a liquid nitrogen-cooled HAWAII 1K detector. Repeated measurements of the Earth's rotation via integrated Sunlight with two different instrument arrangements in the near infrared Y band have produced radial velocities with ~ 10 m/s RMS over a period of several hours. The most recent instrument configuration has achieved an unbinned RMS of 7 m/s and suggests that infrared radial velocity precisions may be able to approach those achieved at optical wavelengths.

Download/Website: `http://adsabs.harvard.edu/abs/2008arXiv0806.3749R`

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Observable Consequences of Planet Formation Models in Systems with Close-in Terrestrial Planets

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Monthly Notices of the Royal Astronomical Society, 384, 663-674. (2008)

To date, two planetary systems have been discovered with close-in, terrestrial-mass planets ($\lesssim 5 - 10$ M_{Earth}). Many more such discoveries are anticipated in the coming years with radial velocity and transit searches. Here we investigate the different mechanisms that could form "hot Earths" and their observable predictions. Models include: 1) *in situ* accretion; 2) formation at larger orbital distance followed by inward "type 1" migration; 3) formation from material being "shepherded" inward by a migrating gas giant planet; 4) formation from material being shepherded by moving secular resonances during dispersal of the protoplanetary disk; 5) tidal circularization of eccentric terrestrial planets with close-in perihelion distances; and 6) photo-evaporative mass loss of a close-in giant planet. Models 1-4 have been validated in previous work. We show that tidal circularization can form hot Earths, but only for relatively massive planets ($\gtrsim 5$ M_{Earth}) with very close-in perihelion distances ($\lesssim 0.025$ AU), and even then the net inward movement in orbital distance is at most only 0.1-0.15 AU. For planets of less than ~ 70 M_{Earth}, photo-evaporation can remove the planet's envelope and leave behind the solid core on a Gyr timescale, but only for planets inside 0.025-0.05 AU. Using two quantities that are observable by current and upcoming missions, we show that these models each produce unique signatures, and can be observationally distinguished. These observables are the planetary system architecture (detectable with radial velocities, transits and transit-timing) and the bulk composition of transiting close-in terrestrial planets (measured by transits via the planet's radius).

Download/Website: `http://adsabs.harvard.edu/abs/2008MNRAS.384..663R`

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ELODIE metallicity-biased search for transiting Hot Jupiters V. An intermediate-period Jovian planet orbiting HD45652

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Astronomy & Astrophysics, in press

We present the detection of a 0.47 $M_{\rm Jup}$ planet in a 44-day period eccentric trajectory (e=0.39) orbiting the metal-rich star HD 45652. This planet, the seventh giant planet discovered in the context of the ELODIE metallicity-biased planet search program, is also confirmed using higher precision radial-velocities obtained with the CORALIE and SOPHIE spectrographs. The orbital period of HD 45652b places it in the middle of the "gap" in the period distribution of extra-solar planets.

Download/Website: `http://www.exoplanets.eu/`

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Spectroscopic parameters for 451 stars in the HARPS GTO planet search program. Stellar [Fe/H] and the frequency of exo-Neptunes.

S. G. Sousa[1,2], *N. C. Santos*[1,3], *M. Mayor*[3], *S. Udry*[3], *L. Casagrande*[4], *G. Israelian* [5] , *F. Pepe*[3], *D. Queloz*[3], *M. J. P. F. G. Monteiro*[1,2]

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[5] Instituto de Astrofísica de Canarias, 38200 La Laguna, Tenerife, Spain

Astronomy & Astrophysics, in press (arXiv:0805.4826)

To understand the formation and evolution of solar-type stars in the solar neighborhood, we need to measure their stellar parameters to high accuracy. We present a catalogue of accurate stellar parameters for 451 stars that represent the HARPS Guaranteed Time Observations (GTO) "high precision" sample. Spectroscopic stellar parameters were measured using high signal-to-noise (S/N) spectra acquired with the HARPS spectrograph. The spectroscopic analysis was completed assuming LTE with a grid of Kurucz atmosphere models and the recent ARES code for measuring line equivalent widths. We show that our results agree well with those ones presented in the literature (for stars in common). We present a useful calibration for the effective temperature as a function of the index color *B-V* and [Fe/H]. We use our results to study the metallicity-planet correlation, namely for very low mass planets. The results presented here suggest that in contrast to their jovian couterparts, neptune-like planets do not form preferentially around metal-rich stars. The ratio of jupiter-to-neptunes is also an increasing function of stellar metallicity. These results are discussed in the context of the core-accretion model for planet formation.

Download/Website: `http://www.astro.up.pt/~sousasag/harps_gto_catalogue.html`

Contact: `sousasag@astro.up.pt`

Evolution of Debris Disks

M. C. Wyatt
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Annual Review of Astronomy & Astrophysics, Vol. 46, in press

Circumstellar dust exists around several hundred main sequence stars. For the youngest stars that dust could be a remnant of the protoplanetary disk. Mostly it is inferred to be continuously replenished through collisions between planetesimals in belts analogous to the Solar System's asteroid and Kuiper belts, or in collisions between growing protoplanets. The evolution of a star's debris disk is indicative of the evolution of its planetesimal belts and may be influenced by planet formation processes, which can continue throughout the first gigayear as the planetary system settles to a stable configuration and planets form at large radii. Evidence for that evolution comes from infrared photometry of large numbers of debris disks, providing snapshots of the dust present at different evolutionary phases, as well as from images of debris disk structure. This review describes the theoretical framework within which debris disk evolution takes place and shows how that framework has been constrained by observations.

Download/Website: `http://arjournals.annualreviews.org/doi/pdf/10.1146/annurev.astro.45.051806.`

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3 Abstracts of theses

Models of rotationally symmetric, collision-dominated debris discs

Torsten Löhne
Astrophysikalisches Institut und Universitätssternwarte, Friedrich-Schiller-Universität, Schillergaesschen 2–3, 07745 Jena, Germany

Ph.D. thesis, accepted

The subject of the work presented here has been models of the size distribution and the spatial distribution of the material in rotationally symmetric so-called debris disc around main-sequence stars. These discs, which are considered remnants of the formation of planetary systems, are an ensemble of objects from sub-micron-sized dust to planetesimals with diameters up to hundreds of kilometres. Mutual collisions and the ejection of very small dust by the stellar radiation pressure lead to a steady decay of otherwise unperturbed debris discs.
The models used are a numerical implementation of the kinetic theory of statistical physics as well as analytic approximations intended for verification and interpretation.
Exemplified by the debris disc found around Vega, the expected wavy size distribution in the dust regime is confirmed, and the production and loss rate is determined for the unbound micro-meteoroids that are ejected from the system due the stellar radiation pressure. It is concluded that the elsewhere proposed high abundance of those unbound grains is incompatible with the numerical results presented here and with more fundamental considerations.
A general conclusion is drawn concerning the radial distribution of dust produced by a planetesimal belt: it is dominated by barely bound grains on highly eccentric orbits.
The long-term evolution of a debris disc is shown to be dominated by the slow transition of the population of planetesimals from the size distribution set in the planet formation and growth phase to the steady-state size distribution defined by disruptive collisions. This transition is directly relevant to the temporal evolution of the observable dust masses and luminosities and indirectly to the deduced total disc masses. The developed models are compatible with observational statistics.
From numerics and analytics, scaling laws are derived for the dependence of the collisional timescales on the disc mass, the radial distance to the star, and the planetesimals' orbital eccentricities.

Download/Website: http://www.astro.uni-jena.de/ tloehne/thesis.pdf
Contact: tloehne@astro.uni-jena.de

4 Jobs and positions

Postdoctoral Research Fellow

Pierre Barge
Laboratoire d'Astrophysique de Marseille, Pole de l'etoile, Site de Chateau-Gombert, 38 rue Frederic Joliot-Curie, 13388 Marseille, cedex 13, France

apply until 31 July 2008, to start on or before 1 September 2008

CoRoT is the first instrument to find extrasolar planets by the transit method from space. Presently, CoRoT has found 4 planets and one Brown Dwarf. More will come soon with a detailed analysis of the 30,000 light curves already processed and the 24,000 LCs that are presently in the pipeline.
We are searching for a fellow who would participate actively in the detection activity and the research program of CoRoT, including interpreting and publishing the results.
Applicants are invited to apply for a postdoctoral research position to work in the CoRoT exoplanet team at Laboratoire d'Astrophysique de Marseille with Drs. Pierre Barge, Magali Deleuil and Claire Moutou and in connection with the other CoRoT partners. The work will be to analyze in detail the light-curves obtained from space by the CoRoT telescope in order to find the smallest detectable planets with this instrument. The successful applicant will have also access to the early detection chain of the so called "alarm mode" (a CoRoT's operational loop). He will have to use Idl in a linux environment.
Experience in exoplanet search and detection of planetary transits in star light-curves is required. Some skill in signal processing and PCA are also appreciated. Candidates should have obtained, by the starting date, a Ph.D. in Astronomy, Physics, Astrophysics, or equivalent.
The appointment is for one year (EUR 2316/month, possibly more following personal experience), renewable for one (or two) additional year; it will ideally begin on or before September 1, 2008. To apply, please send resume, publication list, and statement of research to the above address as soon as possible, and have three letters of reference forwarded to the same address.

Download/Website: http://members.aas.org/JobReg/JobDetailPage.cfm?JobID=24697
Contact: pierre.barge@oamp.fr

Post-doc Job offer

R. Neuhäuser
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apply until 1 Aug 2008, to start in 2008 or early 2009

In the EU FP6 Marie-Curie Transfer-of-Knowledge project at the Astrophysical Institute and University Observatory (AIU) of the Friedrich-Schiller-University Jena, Germany, on

Observations of Planetary Systems by interferometry, adaptive optics, and/or transit monitoring

we invite applications for two post-doc researchers starting any time in 2008, or possibly early 2009 (one post-doc fellowship is available for 21 month and one for 24 month).
This project includes the development of integrated optical devices for astronomical interferometry as well as astronomical observations and is a cooperation of AIU Jena with LAOG Grenoble, France, INAF Capodimonte, Italy, the Fraunhofer Institute for Applied Optics and Precision Engineering, Jena, and the Thuringian State Observatory in Tautenburg near Jena.
The main scientific interest of AIU is the formation and early evolution of stars, brown dwarfs, and planets including the observation and theory of extra-solar planets as well as gas and debris disks by various techniques. As an active, internationally highly visible research group with strong links and cooperations to several institutes world-wide, we can offer a stimulating work environment.
See also www.astro.uni-jena.de and www.exoplanet.de (and www.iof.fraunhofer.de for optics).
Expertise sought includes application of interferometry in astronomy, soft- and hardware development for interferometer instruments, observations of sub-stellar objects by transit, astrometry, direct imaging or other techniques.
We offer a competitive salary according to the Marie-Curie standards plus up to 800 Euro/month mobility allowance, depending on family status.
Applicants should have experience in astronomy and/or optics and should have a doctoral degree or four years of full-time research experience.
Applicants must be nationals of EU member or candidate or associated states (swiss and EFTA-nationals are also eligible). Other international candidates and German citizen can be considered in exceptional cases only. For eligibility, check the EU Marie-Curie web pages or ask us. Questions can be directed to Ralph Neuhaeuser rne@astro.uni-jena.de
Applications (with all relevant documents including CV, description of previous research projects, publication list, possibly copies of papers, and suggestions for a research project) received by 1 August 2008 will receive full consideration. Applications and two letters of reference should be sent independently by normal mail to Prof. Dr. Ralph Neuhaeuser, Schillergässchen 2, D-07745 Jena, Germany.

Download/Website: `http://www.astro.uni-jena.de/Jobs/aussch3.pdf`

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

Postdoctoral Researcher

Rens Waters
ASTRON, Oude Hoogeveensedijk 4, Dwingeloo, 7991 PD, The Netherlands

apply until 15 Septempber 2008, to start from 15 October 2008

The Research and Development Group at ASTRON (Dwingeloo) has a post-doctoral research position available in the area of instrument development for direct detect ion of extra-solar planets.
The second generation VLT instrument SPHERE is an extreme AO camera with several science arms, aimed at the direct detection of extra-solar planets. The instrument is developed by an international consortium, lead by LAOG (Grenoble). The Netherlands (ASTRON, Universities of Amsterdam and Utrecht, and NOVA) and Switzerland (ETH Zurich) lead the development and construction of the SPHERE-ZIMPOL subsystem, a high-precision imaging polarimeter. ZIMPOL is optimized to study the formation, evolution and structure of extra-solar planetary systems by detecting the polarization of starlight scattered by circumstellar material and the reflected, polarized light of extra-solar planets.
The available position will primarily be in the areas of the integration, testing and calibration of the instrument. The researcher will also have the opportunity to contribute to the data analysis, interpretation and modelling including first light observations and commissioning. Fifty percent of the time is free for research.
The position is available starting from October 15, 2008 as a full-time temporary appointment for two years, with the possible extension of a third year.

Gross salary starts with 2804 euro per month and increases to 3010 euro in the third year of employment. The salary is supplemented with a holiday bonus of 8% and a year-end bonus of 6,1% per year. In addition we offer: a pension scheme, partially paid parental leave. Conditions are based on the Collective Employment Agreement of the Dutch Universities.
ASTRON has an international reputation in the design and operation of radio telescopes (Westerbork Synthesis Radio Telescope and LOFAR, the Low Frequency Array) as well as in the design of ground-based and space instrumentation at optical and infrared wavelengths. ASTRON's R&D division has made major contributions to the VLT mid-IR imaging spectrograph VISIR and to MIDI, the mid-IR camera for the VLT Interferometer.
Apart from SPHERE-ZIMPOL, ASTRON is currently involved in X-SHOOTER, VLT's second generation optical/near-IR spectrograph, and in MIRI, the imaging spectrograph for the James Webb Space Telescope.
The successful candidate will have access to excellent computational, research and instrument facilities and travel support. Collaboration with the university groups in Amsterdam and Utrecht is strongly encouraged. For more information see http://www.astron.nl.
Letters of application (including a CV), plus 3 letters of reference should be sent to personnel@astron.nl (or by mail to: HR Department ASTRON, P.O. Box 2, 7990 AA Dwingeloo, The Netherlands) before the deadline - 15 September 2008. E-mail submission of all material is encouraged.
The successful candidate will be the formal employ of the Netherlands Organization for Scientific Research (NWO), at a salary scale commensurate with age and experience. Relocation expenses and assistance with finding accommodation will be provided.
For further information contact: Prof. Rens Waters, who leads the NL involvement in SPHERE (rensw@science.uva.nl) or Ir. Johan Pragt, project manager of the ZIMPOL sub-system (pragt@astron.nl).
The post-doctoral research position is financed by UvA and NOVA and is hosted by ASTRON. The Dutch contribution to SPHERE is financial supported by NWO, University of Amsterdam and NOVA, in close collaboration with the University of Utrecht.

Download/Website: `http://www.astron.nl`

Contact: `rensw@science.uva.nl`

5 Announcements

The Search for Life Continued: Planets Around Other Stars

B.W. Jones
Department of Physics & Astronomy, The Open University, Walton Hall, Milton Keynes MK7 6AA

Book, Newly in print

Barrie Jones addresses the question 'are we alone?', which is one of the most frequently asked questions by scientists and non-scientists alike. In The Search for Life Continued, this question is addressed scientifically, and the author is not afraid to include speculation. Indeed, the author believes beyond reasonable doubt that we are not alone and this belief is based firmly on frontier science of the most imaginative kind.

The author concentrates on planetary systems beyond our own but starts with life on Earth, which is the only life we know to exist, and which provides guidance on how best to search for life elsewhere. Planets are the most likely abode of life and so we start the quest with the search for planets beyond the Solar System – exoplanets. The methods of searching are outlined and the nature of hundreds of exoplanetary systems so far discovered described. In the near future we expect to discover habitable Earth- like planets. But are they actually inhabited? How could

we tell? All will be revealed. This full color book is written for everybody who wants to stay in close contact with the latest on possible life on other planets.

Contents: The essential quest; Life on Earth; The origin & evolution of life on Earth; The Solar System and potential habitats beyond it; Searching for extrasolar planets – direct methods; Searching for extrasolar planets – indirect methods; Extrasolar planetary systems, known and unknown; Finding life on exoplanets; Extraterrestrial intelligence; What might the aliens look like?; Glossary; Further reading and other resources; Index.

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6 As seen on astro-ph

The following list contains all the entries relating to exoplanets that we spotted on astro-ph during June 2008. If you spot any that we missed, please let us know and we'll include them in the next issue.

Exoplanets

astro-ph/0806.0025: **A Low-Mass Planet with a Possible Sub-Stellar-Mass Host in Microlensing Event MOA-2007-BLG-192** by *D.P. Bennett, I.A. Bond, A. Udalski et al*

astro-ph/0806.0298: **HD 179949b: A Close Orbiting Extrasolar Giant Planet with a stratosphere?** by *J.R. Barnes, Travis S. Barman, H.R.A. Jones et al*

astro-ph/0806.0719: **Misaligned spin-orbit in the XO-3 planetary system?** by *G. Hebrard, F. Bouchy, F. Pont et al*

astro-ph/0806.0819: **Planet formation in Alpha Centauri A revisited: not so accretion-friendly after all** by *Philippe Thebault, Francesco Marzari & Hans Scholl*

astro-ph/0806.0851: **A Hubble Space Telescope transit light curve for GJ436b** by *J. L. Bean, G. F. Benedict, D. Charbonneau et al*

astro-ph/0806.1229: **Detection of period variations in extrasolar transiting planet OGLE-TR-111b** by *Rodrigo F. Daz, Patricio Rojo, Mario Melita et al*

astro-ph/0806.1427: **SPH simulations of grain growth in protoplanetary disks** by *Guillaume Laibe, Jean-Franois Gonzalez, Laure Fouchet et al*

astro-ph/0806.1478: **WASP-14b: A 7.7 Mjup transiting exoplanet in an eccentric orbit** by *Y. C. Joshi, D. Pollacco, A. Collier Cameron et al*

astro-ph/0806.1482: **WASP-10b: a 3M$_J$, eccentric transiting gas-giant planet** by *D.J. Christian, N.P. Gibson, E.K. Simpson et al*

astro-ph/0806.1734: **Measurement of the Spin-Orbit Angle of Exoplanet HAT-P-1b** by *John A. Johnson, Joshua N. Winn, Norio Narita et al*

astro-ph/0806.2002: **Differential rotation in giant planets maintained by density-stratified turbulent convection** by *Gary A. Glatzmaier, Martha Evonuk, Tamara M. Rogers*

astro-ph/0806.2795: **Jupiter - friend or foe? I: the asteroids** by *J. Horner & B. W. Jones*

astro-ph/0806.3979: **The NStED Exoplanet Transit Survey Service** by *K. von Braun, M. Abajian, B. Ali et al*

astro-ph/0806.4008: **HAT-P-9b: A Low Density Planet Transiting a Moderately Faint F star** by *A. Shporer, G. A. Bakos, F. Bouchy et al*

astro-ph/0806.4087: **Planetesimal Accretion in Binary Systems: The Effects of Gas Dissipation** by *Ji-Wei Xie & Ji-Lin Zhou*
astro-ph/0806.4197: **Planet Migration and Disk Destruction due to Magneto-Centrifugal Stellar Winds** by *R.V.E. Lovelace, M.M. Romanova, A.W. Barnard*
astro-ph/0806.4409: **Prospects for the habitability of OGLE-2006-BLG-109L** by *Malhotra, Renu & Minton, David A.*
astro-ph/0806.4353: **Toward a homogeneous set of transiting planet parameters** by *Guillermo Torres, Joshua N. Winn, Matthew J. Holman*
astro-ph/0806.4587: **The HARPS search for southern extra-solar planets. XIII. A planetary system with 3 Super-Earths (4.2, 6.9, & 9.2 Earth masses)** by *Mayor, M. Udry, S. Lovis, C. et al*
astro-ph/0806.4606: **Exoplanet Mapping Revealed** by *Cowan, Nicolas B. & Agol, Eric*

Disks

astro-ph/0806.0088: **Photoprocesses in protoplanetary disks** by *E.F. van Dishoeck, B. Jonkheid & M.C. van Hemert*
astro-ph/0806.0720: **Encounters in the ONC - observing imprints of star-disc interactions** by *C. Olczak, S. Pfalzner & A. Eckart*
astro-ph/0806.1646: **Planetesimal formation around the snow line in MRI-driven turbulent protoplanetary disks** by *F. Brauer, Th. Henning & C.P. Dullemond*
astro-ph/0806.1877: **Gas and dust mass in the disk around the Herbig Ae star HD169142** by *Olja Panic, Michiel R. Hogerheijde, David Wilner et al*
astro-ph/0806.2318: **IRAS04325+2402C: A very low mass object with an edge-on disk** by *Alexander Scholz, Ray Jayawardhana, Kenneth Wood et al*
astro-ph/0806.2639: **A Spitzer view of protoplanetary disks in the gamma Velorum cluster** by *Jesus Hernandez, Lee Hartmann, Nuria Calvet et al*
astro-ph/0806.3084: **Spatially resolved H2 emission from the disk around T Tau N** by *Philip F. Hopkins, Lars Hernquist, Thomas J. Cox et al*
astro-ph/0806.4936: **A near-infrared interferometric survey of debris disc stars. II. CHARA/FLUOR observations of six early-type dwarfs** by *Absil, O., Di Folco, E. Merand, A. et al*

Instrumentation and Techniques

astro-ph/0806.0646: **Apodized Pupil Lyot Coronagraph Working Without Lyot Stop** by *Mamadou N'Diaye, Kjetil Dohlen & Salvador Cuevas*
astro-ph/0806.2026: **Precise Wavefront Correction with an Unbalanced Nulling Interferometer for Exo-Planet Imaging Coronagraphs** by *J. Nishikawa, L. Abe, N. Murakami et al*
astro-ph/0806.4463: **Comparing the performance of stellar variability filters for the detection of planetary transits** by *Bonomo, A. S. & Lanza, A. F.*
astro-ph/0806.4544: **Optimal strategies of radial velocity observations in planet search surveys** by *Baluev, Roman V.*
astro-ph/0806.4611: **The NStED Stellar and Exoplanet Hosting Star Service** by *Ramirez, S. Ali, B. Baker, R. et al*