ExoPlanet News
An Electronic Newsletter

No. 23, October 5th, 2009

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Contents

1 Editorial

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

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 at the beginning of November 2009. As for this issue, if you wish to include ONE figure per abstract, please do so.

Best wishes
Andrew Norton & Glenn White
The Open University

2 Abstracts of refereed papers

Chaotic star formation and the alignment of stellar rotation with disc and planetary orbital axes

M.R. Bate[1], *G. Lodato*[2,3], *J.E. Pringle*[2,4]

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[2] Theoretical Astrophysics Group, University of Leicester, Leicester LE1 7RH, United Kingdom
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Monthly Notices of the Royal Astronomical Society, in press (arXiv:0909.4255)

We investigate the evolution of the relative angle between the stellar rotation axis and the circumstellar disc axis of a star that forms in a stellar cluster from the collapse of a turbulent molecular cloud. This is an inherently chaotic environment with variable accretion, both in terms of rate and the angular momentum of the material, and dynamical interactions between stars. We find that the final stellar rotation axis and disc spin axis can be strongly misaligned, but this occurs primarily when the disc is truncated by a dynamical encounter so that the final disc rotation axis depends simply on what fell in last. This may lead to planetary systems with orbits that are misaligned with the stellar rotation axis, but only if the final disc contains enough mass to form planets. We also investigate the time variability of the inner disc spin axis, which is likely to determine the direction of a protostellar jet. We find that the jet direction varies more strongly for lighter discs, such as those that have been truncated by dynamical interactions or have suffered a period of rapid accretion. Finally, we note that variability of the angular momentum of the material accreting by a star implies that the internal velocity field of such stars may be more complicated than that of aligned differential rotation.

Download/Website: `http://arxiv.org/abs/0909.4255/`

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

A homogeneous spectroscopic analysis of host stars of transiting planets

M. Ammler-von Eiff [1,2], *N.C. Santos*[1], *S. G. Sousa* [1,3], *J. Fernandes* [4,5], *T. Guillot* [6], *G. Israelian* [7], *M. Mayor* [8], *C. Melo* [9]

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[2] Centro de Astronomia e Astrofísica da Universidade de Lisboa, Observatório Astronómico de Lisboa, Tapada da Ajuda, 1349-018 Lisboa, Portugal
[3] Departamento de Matemática Aplicada, Faculdade de Ciências da Universidade do Porto, Portugal
[4] Centro de Física Computacional, Universidade de Coimbra, Coimbra, Portugal
[5] Observatório Astronómico e Departamento de Matemática, Universidade de Coimbra, Coimbra, Portugal
[6] Observatoire de la Côte d'Azur, Laboratoire Cassiopée, CNRS UMR 6202, BP 4229, 06304 Nice Cedex 4, France
[7] Instituto de Astrofísica de Canarias, 38200 La Laguna, Tenerife, Spain
[8] Observatoire de Genève, Université de Genève, 51 Ch.des Mailletes, 1290 Sauverny, Switzerland
[9] European Southern Observatory, Casilla 19001, Santiago 19, Chile

Astronomy & Astrophysics, accepted (arXiv:0909.0285v1)

The analysis of transiting extra-solar planets provides an enormous amount of information about the formation and evolution of planetary systems. A precise knowledge of the host stars is necessary to derive the planetary properties accurately. The properties of the host stars, especially their chemical composition, are also of interest in their own right.
Information about planet formation is inferred by, among others, correlations between different parameters such as the orbital period and the metallicity of the host stars. The stellar properties studied should be derived as homogeneously as possible. The present work provides new, uniformly derived parameters for 13 host stars of transiting planets.
Effective temperature, surface gravity, microturbulence parameter, and iron abundance were derived from spectra of both high signal-to-noise ratio and high resolution by assuming iron excitation and ionization equilibria.
For some stars, the new parameters differ from previous determinations, which is indicative of changes in the planetary radii. A systematic offset in the abundance scale with respect to previous assessments is found for the TrES and HAT objects. Our abundance measurements are remarkably robust in terms of the uncertainties in surface gravities. The iron abundances measured in the present work are supplemented by all previous determinations using the same analysis technique. The distribution of iron abundance then agrees well with the known metal-rich distribution of planet host stars. To facilitate future studies, the spectroscopic results of the current work are supplemented by the findings for other host stars of transiting planets, for a total dataset of 50 objects.

Download/Website: `http://de.arxiv.org/abs/0909.0285`

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Direct Detection of Planets Orbiting Large Angular Diameter Stars: Sensitivity of an Internally-occulting Space-based Coronagraph

J. Crepp[1], *S. Mahadevan*[2], *J. Ge*[3]

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[2] Penn State
[3] University of Florida

ApJ, 702, 672, 2009 (arXiv:0909.2259)

High-contrast imaging observations of large angular diameter stars enable complementary science questions to be addressed compared to the baseline goals of proposed missions like the Terrestrial Planet Finder-Coronagraph, New World's Observer, and others. Such targets, however, present a practical problem in that finite stellar size results in unwanted starlight reaching the detector, which degrades contrast. In this paper, we quantify the sensitivity, in terms of contrast, of an internally occulting, space-based coronagraph as a function of stellar angular diameter,

from unresolved dwarfs to the largest evolved stars. Our calculations show that an assortment of band-limited image masks can accommodate a diverse set of observations to help maximize mission scientific return. We discuss two applications based on the results: the spectro-photometric study of planets already discovered with the radial velocity technique to orbit evolved stars, which we elucidate with the example of Pollux b, and the direct detection of planets orbiting our closest neighbor, α Centauri, whose primary component is on the main sequence but subtends an appreciable angle on the sky. It is recommended that similar trade studies be performed with other promising internal, external, and hybrid occulter designs for comparison, as there is relevance to a host of interesting topics in planetary science and related fields.

Download/Website: `http://arxiv.org/abs/0909.2259`

Contact: `jcrepp@astro.caltech.edu`

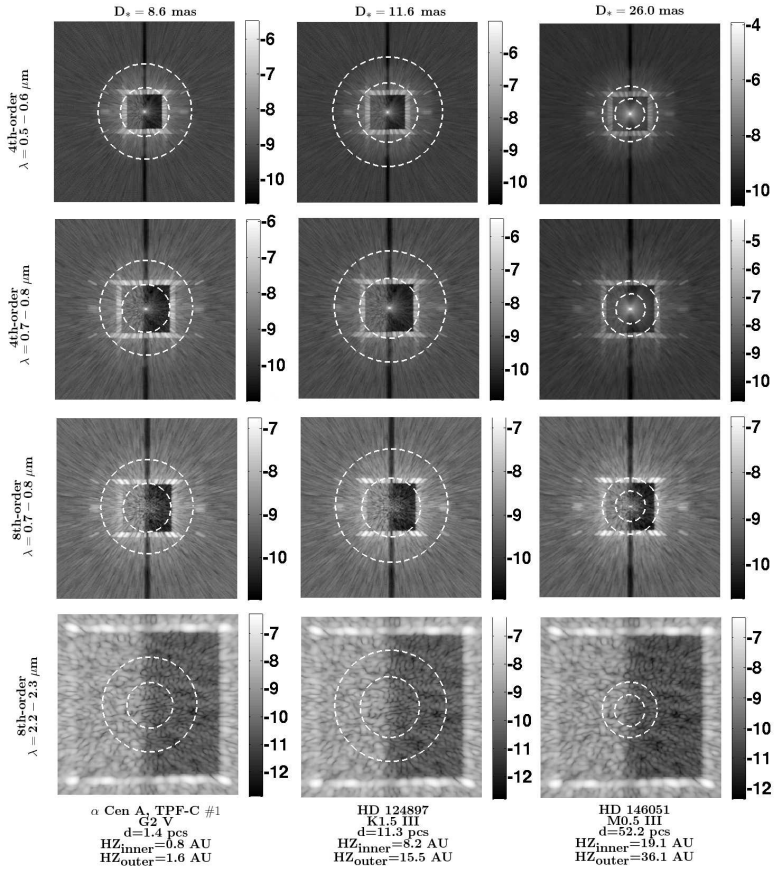

Figure 1: (Crepp et al.) High-contrast images of three stars with large angular diameters. Each are more massive than the Sun. The dashed white lines indicate the location of the habitable zone for reference. Amplitude errors break the spatial symmetry of speckles allowing optimal suppression of half the dark-field with a single deformable mirror. The 4th-order band-limited mask leaks significantly more starlight than an 8th-order design. Observations in the near-infrared provide a wider dark-hole and deeper contrast, thus permitting the reflected light detection of more distant planets.

Rotation Velocities for M-dwarfs

J.S. Jenkins[1,2], *L.W. Ramsey*[1], *H.R.A. Jones*[3], *Y. Pavlenko*[3], *J. Gallardo*[2], *J.R. Barnes*[3], *D.J. Pinfield*[3]

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Astrophysical Journal, published (2009, ApJ, 704, 975)

We present spectroscopic rotation velocities (v sin i) for 56 M dwarf stars using high-resolution Hobby-Eberly Telescope High Resolution Spectrograph red spectroscopy. In addition, we have also determined photometric effective temperatures, masses, and metallicities ([Fe/H]) for some stars observed here and in the literature where we could acquire accurate parallax measurements and relevant photometry. We have increased the number of known v sin i values for mid M stars by around 80% and can confirm a weakly increasing rotation velocity with decreasing effective temperature. Our sample of v sin is peak at low velocities ($\sim$3 km s^{-1}). We find a change in the rotational velocity distribution between early M and late M stars, which is likely due to the changing field topology between partially and fully convective stars. There is also a possible further change in the rotational distribution toward the late M dwarfs where dust begins to play a role in the stellar atmospheres. We also link v sin i to age and show how it can be used to provide mid-M star age limits. When all literature velocities for M dwarfs are added to our sample, there are 198 with $v \sin i \leq 10$ km s^{-1} and 124 in the mid-to-late M star regime (M3.0–M9.5) where measuring precision optical radial velocities is difficult. In addition, we also search the spectra for any significant Hα emission or absorption. Forty three percent were found to exhibit such emission and could represent young, active objects with high levels of radial-velocity noise. We acquired two epochs of spectra for the star GJ1253 spread by almost one month and the Hα profile changed from showing no clear signs of emission, to exhibiting a clear emission peak. Four stars in our sample appear to be low-mass binaries (GJ1080, GJ3129, Gl802, and LHS3080), with both GJ3129 and Gl802 exhibiting double Hα emission features. The tables presented here will aid any future M star planet search target selection to extract stars with low $v \sin i$.

Download/Website: `http://cdsads.u-strasbg.fr/`

Contact: `jjenkins@das.uchile.cl`

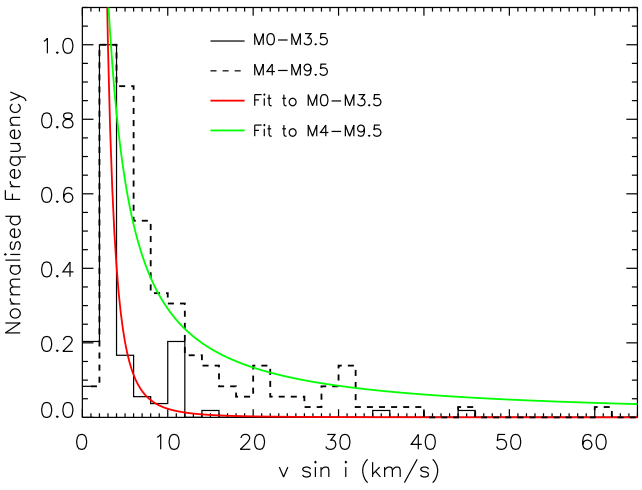

Figure 2: (Jenkins et al.) Histograms of rotation velocities in this sample and in the literature split by spectral type. The solid bins represent stars in the spectral range from M0–M3.5, whereas the dashed bins represent stars between M4–M9.5. Both samples peak at low rotation velocities of around $\sim$3 km s^{-1}, however the bins that contain the later type objects have many more stars with measureable v sin i. The solid curves are the best fit power laws to the data, with the red (dark grey) curve representing the M0-M3.5 bins and the green (light grey) curve representing the M4-M9.5 data. The changing power law between the two spectral regions highlight a possible change in the rotational distribution for fully convective stars.

Particle Clumping and Planetesimal Formation Depend Strongly on Metallicity

Anders Johansen[1], *Andrew Youdin*[2], *Mordecai-Mark Mac Low*[3]

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The Astrophysical Journal, in press (arXiv:0909.0259)

We present three-dimensional numerical simulations of particle clumping and planetesimal formation in protoplanetary disks with varying amounts of solid material. As centimeter-size pebbles settle to the mid-plane, turbulence develops through vertical shearing and streaming instabilities. We find that when the pebble-to-gas column density ratio is 0.01, corresponding roughly to solar metallicity, clumping is weak, so the pebble density rarely exceeds the gas density. Doubling the column density ratio leads to a dramatic increase in clumping, with characteristic particle densities more than ten times the gas density and maximum densities reaching several thousand times the gas density. This is consistent with unstratified simulations of the streaming instability that show strong clumping in particle dominated flows. The clumps readily contract gravitationally into interacting planetesimals of order 100 km in radius. Our results suggest that the correlation between host star metallicity and exoplanets may reflect the early stages of planet formation. We further speculate that initially low metallicity disks can be particle enriched during the gas dispersal phase, leading to a late burst of planetesimal formation.

Download/Website: `http://arxiv.org/abs/0909.0259`

Contact: `ajohan@strw.leidenuniv.nl`

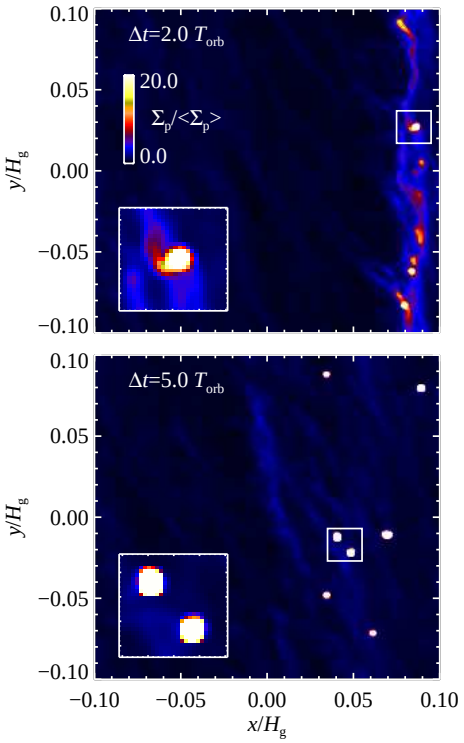

Figure 3: (Johansen et al.) Formation of planetesimals in a disk of supersolar metallicity by gravitational collapse of pebble clumps. The plot shows the column density of pebbles at two times in a reference frame corotating with the gas at an arbitrary orbital distance from the star. The x-axis represents the radial direction and the y-axis the azimuthal direction.

Can gas in young debris disks be constrained by their radial brightness profiles?

Alexander V. Krivov[1], *Fabian Herrmann*[1], *Alexis Brandeker*[2], *Philippe Thébault*[3,2]

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Astronomy and Astrophysics, in press (arXiv:0909.4225)

Disks around young stars are known to evolve from optically thick, gas-dominated protoplanetary disks to optically thin, almost gas-free debris disks. It is thought that the primordial gas is largely removed at ages of ~ 10 Myr and indeed, only little amounts of gas have been deduced from observations for debris disks at ages of > 10 Myr. However, gas detections are difficult and often indirect, not allowing one to discern the true gas densities. This suggests using dynamical arguments: it has been argued that gas, if present with higher densities, would lead to flatter radial profiles of the dust density and brightness than those actually observed. In this paper, we systematically study the influence of gas on the radial profiles of brightness. We assume that dust is replenished by planetesimals orbiting in a "birth ring" and model the dust distribution and scattered-light brightness profile in the outer part of the disk exterior to the birth ring, under different assumptions about the gas component. Our numerical simulations, supported with an analytic model, show that the radial profile of dust density and the surface brightness are surprisingly insensitive to variation of the parameters of a central star, location of the dust-producing planetesimal belt, dustiness of the disk and — most importantly — the parameters of the ambient gas. The radial brightness slopes in the outer disks are all typically in the range $-3...-4$. This result holds for a wide range of gas densities (three orders of magnitude), for different radial profiles of the gas temperature, both for gas of solar composition and gas of strongly non-solar composition. The slopes of $-3...-4$ we find are the same that were theoretically found for gas-free debris disks, and they are the same as actually retrieved from observations of many debris disks. Our specific results for three young (10–30 Myr old), spatially resolved, edge-on debris disks (β Pic, HD 32297, and AU Mic) show that the observed radial profiles of the surface brightness do not pose any stringent constraints on the gas component of the disk. We cannot exclude that outer parts of the systems may have retained substantial amounts of primordial gas which is not evident in the gas observations (e.g. as much as 50 Earth masses for β Pic). However, the possibility that gas, most likely secondary, is only present in little to moderate amounts, as deduced from gas detections (e.g. ~ 0.05 Earth masses in the β Pic disk or even less), remains open, too.

Download/Website: `http://arxiv.org/abs/0909.4225`

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

Elemental abundances and minimum mass of heavy elements in the envelope of HD 189733b

Olivier Mousis[1,2,5], *Jonathan I. Lunine*[1], *Giovanna Tinetti*[3,5], *Caitlin A. Griffith*[1], *Adam P. Showman*[1], *Yann Alibert*[2], *Jean-Philippe Beaulieu*[4,5]

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[2] Institut UTINAM, CNRS-UMR 6213, Observatoire de Besançon, Université de Franche-Comté, Besançon, France
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[4] Institut d'astrophysique de Paris, CNRS-UMR 7095, Université Pierre & Marie Curie, France
[5] The HOLMES collaboration

Astronomy & Astrophysics, in press

Oxygen (O) and carbon (C) have been inferred recently to be subsolar in abundance from spectra of the atmosphere of the transiting hot Jupiter HD 189733b. Yet, the mass and radius of the planet coupled with structure models indicate a strongly supersolar abundance of heavy elements in the interior of this object. Here we explore the discrepancy between the large amount of heavy elements suspected in the planet's interior and the paucity of volatiles

measured in its atmosphere. We describe the formation sequence of the icy planetesimals formed beyond the snow line of the protoplanetary disk and calculate the composition of ices ultimately accreted in the envelope of HD 189733b on its migration pathway. This allows us to reproduce the observed volatile abundances by adjusting the mass of ices vaporized in the envelope. The predicted elemental mixing ratios should be 0.15–0.3 times solar in the envelope of HD 189733b if they are fitted to the recent O and C determinations. However, our fit to the minimum mass of heavy elements predicted by internal structure models gives elemental abundances that are 1.2–2.4 times oversolar in the envelope of HD189733b. We propose that the most likely cause of this discrepancy is irradiation from the central star leading to development of a radiative zone in the planet's outer envelope which would induce gravitational settling of elements. Hence, all strongly irradiated extrasolar planets should present subsolar abundances of volatiles. We finally predict that the abundances of nitrogen (N), sulfur (S) and phosphorus (P) are of $\sim 2.8 \times 10^{-5}$, 5.3×10^{-6} and 1.8×10^{-7} relative to H_2, respectively in the atmosphere of HD 189733b.

3 Conference announcements

Exoplanets and their Environments

Helen Walker[1]*; Jane Greaves*[2]*; Barrie Jones*[3]*; Anita Richards*[4]
[1] RAL
[2] St Andrews
[3] OU
[4] Manchester

Geological Society Lecture Theatre, Burlington House, Piccadilly, London, 9 Oct 2009, 10.30-15.30

This meeting covers exoplanets, theory and observation, the processes that make them and the conditions on them. New techniques and satellites have meant that ever smaller planets are being detected, and their properties better determined. Many of the contributions will be from early-career astronomers. Poster contributions are also welcome – please contact Helen Walker. Entry is open to all; a small fee is payable by non-members of the RAS.

Download/Website: `http://www.ras.org.uk/index.php?option=com_content&task=view&id=227#list`

Contact: `helen.walker@stfc.ac.uk`

4 Jobs and positions

Postdoctoral jobs & PhD studentship in extra-solar planets

Dr. Nuno C. Santos

Centro de Astrofisica da Universidade do Porto (CAUP), Available from 1st January 2010

The Centro de Astrofisica da Universidade do Porto (CAUP) opens a call for:

- 2 Advanced Post-doctoral Researchers (for an initial period of 2 years, possibly renewed up to 5 years)
- 1 Junior Post-doctoral Researcher (for a period of 1 year)
- 1 PhD student (4 years)

The positions are open in the field of extra-solar planets, and are to be started from the 1st of January 2010.
The yearly income of the Advanced Post-Doctoral positions is above 24 500 euros. The income of the Junior Post-Doc position is near 19 000 euro. The PhD fellowship has an yearly income of nearly 12 000 euros. All the above values are tax free. The project further includes funds for travelling (conferences, collaborations, observing missions).
The successful candidates are expected to pursue research in the following fields:

- Astrophysical limitations to the detection of Earth like planets (including stellar activity, oscillations, and granulation)
- Spectroscopic analysis of stars with planetary systems (focusing on M-dwarfs and fast rotating FGK dwarfs)
- Extra-solar planet searches (in particular using radial-velocity and transit techniques)

The researchers will be included in the team on "Origin and Evolution of Stars and Planets" at CAUP.
The above mentioned research is to be seen in the context of the participation in the project of the ESPRESSO@VLT instrument (http://espresso.astro.up.pt), a new high resolution ultra stable spectrograph for the VLT.
The two Advanced Post-doctoral Researchers as well as the PhD student positions are given in the context of the Starting Grant "Extra-solar planets and stellar astrophysics: towards the detection of Other Earths" funded by the European Community/European Research Council under the FP7 Ideas programme.
The Junior Pos-Doctoral researcher position is given in the context of grant PTDC/CTE-AST/098528/2008 funded by the Fundacao para a Ciencia e a Tecnologia (FCT, Portugal).

Download/Website: `http://www.astro.up.pt/caup/index.php?WID=141Lang=ukCID=1ID=51&Lang=uk&CID=1&ID=51`

Contact: `Nuno.Santos@astro.up.pt`

Sagan Exoplanet Postdoctoral Fellowships

Dr. Dawn M. Gelino

Pasadena, CA, Due: November 5, 2009; Start Date: Fall 2010

We are now accepting applications for the 2010 Sagan Exoplanet Postdoctoral Fellowships! Applications are due Thursday, November 5 at 4 PM PST.

On behalf of the NASA Astrophysics Division, the NASA Exoplanet Science Institute (NExScI) is pleased to announce the 2010 Sagan Postdoctoral Fellowship Program and solicits applications for fellowships to begin in the fall of 2010. The Sagan Fellowships support outstanding recent postdoctoral scientists to conduct independent research that is broadly related to the science goals of the NASA Exoplanet Exploration area. The primary goal of missions within this program is to discover and characterize planetary systems and Earth-like planets around nearby stars.

The proposed research may be theoretical, observational, or instrumental. This program is open to applicants of any nationality who have earned (or will have earned) their doctoral degrees between January 1, 2007 and September 1, 2010, in astronomy, physics, or related disciplines. The fellowships are tenable at U.S. host institutions of the fellows' choice, subject to a maximum of one new fellow per host institution per year. The duration of the fellowship is up to three years: an initial one-year appointment and two annual renewals contingent on satisfactory performance and availability of NASA funding.

The Announcement of Opportunity, which includes detailed program policies and application instructions, is available on-line at: http://nexsci.caltech.edu/sagan/fellowship.shtml . Applicants must follow all instructions given in this Announcement including those for submitting applications through the web. Inquiries about the Sagan Fellowships may be directed to saganfellowship@ipac.caltech.edu.

The deadline for all required materials, including applications and letters of reference, is Thursday, November 5, 2009 (4:00 PM PST). We anticipate awarding 5 fellowships in 2010. Offers are expected to be made before February 1, 2010, and new Sagan Fellow appointments are expected to begin on or about September 1, 2010.

Download/Website: `http://nexsci.caltech.edu/sagan/fellowship.shtml`

Contact: `saganfellowship@ipac.caltech.edu`

Postdoc position

Magali Deleuil and Claire Moutou
LAM, Marseille, France, www.oamp.fr

LAM, January 2010

TRANSITING EXOPLANETS FROM SPACE (LAM, Marseille, France)
The CoRoT team at LAM offers a job position for an experimented astronomer in the field of exoplanetary science. The CoRoT discoveries require a large observational support from ground-based facilities, both in spectroscopy and photometry. The candidate should have developed skills in observational technics. She/he will work in collaboration with the CoRoT team at LAM and the European CoRoT Exoplanet Science Team. The CoRoT LAM team contributes to: target selection, analysis of CoRoT lightcurves, radial velocity measurements, spectroscopic analyses, and planet characterization. In the context of the extension of the CoRoT mission up to 2013, the position is offered for two years, starting in January 2010, with a possible third year.

Download/Website: `http://exoplanet.open.ac.uk/`

Contact: `Magali.Deleuil@oamp.fr`

5 As seen on astro-ph

The following list contains all the entries relating to exoplanets that we spotted on astro-ph during September 2009. 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/0909.0004: **Giant planet migration, disk evolution, and the origin of transitional disks** by *R.D. Alexander, P.J. Armitage*
astro-ph/0909.0112: **Characterization of the Resonant Caustic Perturbation** by *Sun-Ju Chung*
astro-ph/0909.0140: **gamma Doradus stars in the COROT exoplanets fields: first inspection** by *P. Mathias, E. Chapellier, M. Bouabid et al.*
astro-ph/0909.0185: **Water in HD 209458b's atmosphere from 3.6 – 8 microns IRAC photometric observations in primary transit** by *J.P. Beaulieu, D.M. Kipping, V. Batista et al.*
astro-ph/0909.0259: **Particle Clumping and Planetesimal Formation Depend Strongly on Metallicity** by *Anders Johansen, Andrew Youdin, Mordecai-Mark Mac Low*

astro-ph/0909.0284: **Outward Migration of Terrestrial Embryos in Binary Systems** by *Matthew J. Payne, Mark C.Wyatt, Philippe Thebault*

astro-ph/0909.0285: **A homogeneous spectroscopic analysis of host stars of transiting planets** by *M. Ammler-von Eiff, N.C. Santos, S.G. Sousa et al.*

astro-ph/0909.0332: **Speed limit on Neptune migration imposed by Saturn tilting** by *Gwenael Boue, Jacques Laskar, Petr Kuchynka*

astro-ph/0909.0404: **Origin and Dynamical Evolution of Neptune Trojans – I: Formation and Planetary Migration** by *P. S. Lykawka, J. Horner, B. W. Jones et al.*

astro-ph/0909.0506: **Determination of stellar radii from asteroseismic Data** by *Sarbani Basu, William J. Chaplin, Yvonne Elsworth*

astro-ph/0909.0770: **Massive Satellites of Close-In Gas Giant Exoplanets** by *Timothy A. Cassidy, Rolando Mendez, Phil Arras et al.*

astro-ph/0909.0802: **Candidate free-floating super-Jupiters in the young sigma Orionis open cluster** by *G. Bihain, R. Rebolo, M. R. Zapatero Osorio et al.*

astro-ph/0909.0824: **Construction of Coupled Period-Mass Functions in Extrasolar Planets through the Non-parametric Approach** by *Ing-Guey Jiang, Li-Chin Yeh, Yen-Chang Chang et al.*

astro-ph/0909.0957: **A Survey of Multiple Planet Systems** by *Jason T. Wright*

astro-ph/0909.1564: **Transit timing analysis of the exoplanets TrES-1 and TrES-2** by *M. Rabus, H. J. Deeg, R. Alonso et al.*

astro-ph/0909.1604: **On the Period-Mass Functions of Extrasolar Planets** by *Li-Chin Yeh, Yen-Chang Chang, Wen-Liang Hung et al.*

astro-ph/0909.1734: **Radiatively heated, protoplanetary discs with dead zones. I. Dust settling and thermal structure of discs around M stars** by *Yasuhiro Hasegawa, Ralph E. Pudritz*

astro-ph/0909.1752: **Transit Lightcurves of Extrasolar Planets Orbiting Rapidly-Rotating Stars** by *Jason W. Barnes*

astro-ph/0909.1821: **51 Ophiuchus: A Possible Beta Pictoris Analog Measured with the Keck Interferometer Nuller** by *Christopher C. Stark, Marc J. Kuchner, Wesley A. Traub et al.*

astro-ph/0909.1886: **Constructing the secular architecture of the solar system I: The giant planets** by *Morbidelli Alessandro, Ramon Brasser, Kleomenis Tsiganis et al.*

astro-ph/0909.2043: **Models of Neptune-Mass Exoplanets: Emergent Fluxes and Albedos** by *David S. Spiegel, Adam Burrows, Laurent Ibgui et al.*

astro-ph/0909.2299: **The peculiar solar composition and its possible relation to planet formation** by *Jorge Melendez, Martin Asplund, Bengt Gustafsson et al.*

astro-ph/0909.2548: **Exoplanet Transit Database. Reduction and processing of the photometric data of exoplanet transits** by *Stanislav Poddany, Lubos Brat, Ondrej Pejcha*

astro-ph/0909.2652: **Forming Planetesimals in Solar and Extrasolar Nebulae** by *E. Chiang*

astro-ph/0909.2662: **The Formation Mechanism of Gas Giants on Wide Orbits** by *Sarah E. Dodson-Robinson, Dimitri Veras, Eric B. Ford et al.*

astro-ph/0909.2702: **Tohoku-Hiroshima-Nagoya planetary spectra library: A method for characterizing planets in the visible to near infrared** by *Ramsey Lundock, Takashi Ichikawa, Hirofumi Okita et al.*

astro-ph/0909.2875: **A Search for Additional Planets in the NASA EPOXI Observations of the Exoplanet System GJ 436** by *Sarah Ballard, Jessie L. Christiansen, David Charbonneau et al.*

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