ExoPlanet News
An Electronic Newsletter

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Contents

1 Editorial

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

We are pleased to present a full newsletter this month, containing plenty of exciting new results as well as some interesting announcements and conference notifications. If you'd like to bring your recent papers to the attention of a wider audience, please submit them to the next and future editions – the newsletter now has a circulation of over 1000 readers. 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.

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 July 2010. As for this issue, if you wish to include ONE .eps figure per abstract, please do so.

Best wishes
Andrew Norton & Glenn White
The Open University

2 Abstracts of refereed papers

HAT-P-16b: A 4 $M_{\rm J}$ Planet Transiting A Bright Star On An Eccentric Orbit

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Astrophysical Journal, submitted and accepted

We report the discovery of HAT-P-16b, a transiting extrasolar planet orbiting the $V = 10.8$ mag F8 dwarf GSC 2792-01700, with a period $P = 2.775960 \pm 0.000003$ d, transit epoch $T_c = 2455027.59293 \pm 0.00031$ (BJD), and transit duration 0.1276 ± 0.0013 d. The host star has a mass of 1.22 ± 0.04 $\mathrm{M_{Sun}}$, radius of 1.24 ± 0.05 $\mathrm{R_{Sun}}$, effective temperature 6158 ± 80 K, and metallicity $[\mathrm{Fe/H}] = +0.17 \pm 0.08$. The planetary companion has a mass of 4.193 ± 0.094 $M_{\rm J}$, and $radiusof 1.289 \pm 0.066$ $R_{\rm J}$ yielding a mean density of 2.42 ± 0.35 g cm^{-3}. Comparing these observed characteristics with recent theoretical models, we find that HAT-P-16b is consistent with a 1 Gyr H/He-dominated gas giant planet. HAT-P-16b resides in a sparsely populated region of the mass-radius diagram and has a non-zero eccentricity of $e = 0.036$ with a significance of 10σ.

Download/Website: `http://arxiv.org/abs/1005.2009`

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Gas- and dust evolution in protoplanetary disks

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Astronomy & Astrophysics, published (2010A&A...513A..79B)

Context. Current models of the size- and radial evolution of dust in protoplanetary disks generally oversimplify either the radial evolution of the disk (by focusing at one single radius or by using steady state disk models) or they assume particle growth to proceed monodispersely or without fragmentation. Further studies of protoplanetary disks – such as observations, disk chemistry and structure calculations or planet population synthesis models – depend on the distribution of dust as a function of grain size and radial position in the disk.
Aims. We attempt to improve upon current models to be able to investigate how the initial conditions, the build-up phase, and the evolution of the protoplanetary disk influence growth and transport of dust.
Methods. We introduce a new model similar to Brauer et al. (2008, A&A, 480, 859) in which we now include the time-dependent viscous evolution of the gas disk, and in which more advanced input physics and numerical integration methods are implemented.
Results. We show that grain properties, the gas pressure gradient, and the amount of turbulence are much more influencing the evolution of dust than the initial conditions or the build-up phase of the protoplanetary disk. We quantify which conditions or environments are favorable for growth beyond the meter size barrier. High gas surface densities or zonal flows may help to overcome the problem of radial drift, however already a small amount of turbulence poses a much stronger obstacle for grain growth.

Download/Website: `http://dx.doi.org/10.1051/0004-6361/200913731`

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Stellar activity and magnetic shielding

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Proceedings IAU Symposium 264, 385-394, 2010, published

Stellar activity has a particularly strong influence on planets at small orbital distances, such as close-in exoplanets. For such planets, we present two extreme cases of stellar variability, namely stellar coronal mass ejections and stellar wind, which both result in the planetary environment being variable on a timescale of billions of years. For both cases, direct interaction of the streaming plasma with the planetary atmosphere would entail servere consequences. In certain cases, however, the planetary atmosphere can be effectively shielded by a strong planetary magnetic field. The efficiency of this shielding is determined by the planetary magnetic dipole moment, which is difficult to constrain by either models or observations. We present different factors which influence the strength of the planetary magnetic dipole moment. Implications are discussed, including nonthermal atmospheric loss, atmospheric biomarkers, and planetary habitability.

Download/Website: `http://dx.doi.org/10.1017/S1743921309992961`
Download/Website: `http://arxiv.org/abs/1005.0293`

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On-Sky Demonstration of a Linear Band-limited Mask with Application to Visual Binary Stars

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ApJ, published (2010ApJ...715.1533C)

We have designed and built the first band-limited coronagraphic mask used for ground-based high-contrast imaging observations. The mask resides in the focal plane of the near-infrared camera PHARO at the Palomar Hale telescope and receives a well-corrected beam from an extreme adaptive optics system. Its performance on-sky with single stars is comparable to current state-of-the-art instruments: contrast levels of $\sim 10^{-5}$ or better at 0.8" in K_s after post-processing, depending on how well non-common-path errors are calibrated. However, given the mask's linear geometry, we are able to conduct additional unique science observations. Since the mask does not suffer from pointing errors down its long axis, it can suppress the light from two different stars simultaneously, such as the individual components of a spatially resolved binary star system, and search for faint tertiary companions. In this paper, we present the design of the mask, the science motivation for targeting binary stars, and our preliminary results, including the detection of a candidate M-dwarf tertiary companion orbiting the visual binary star HIP 48337, which we are continuing to monitor with astrometry to determine its association.

Download/Website: `http://adsabs.harvard.edu/abs/2010ApJ...715.1533C`

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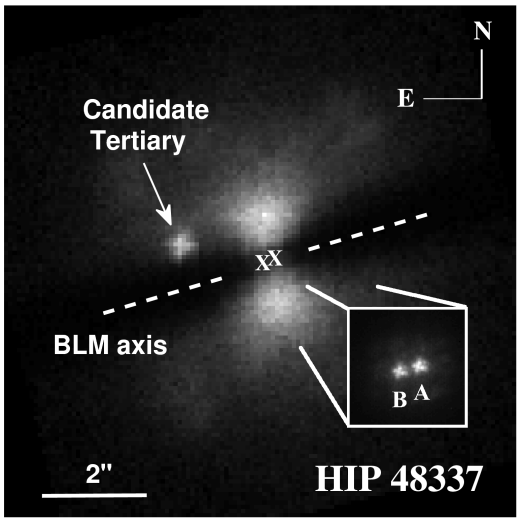

Figure 1: (Crepp et al.) Discovery image of the HIP 48337 C candidate companion taken at Palomar on 11-10-2008 UT in K_s with a linear band-limited mask. The primary components, HIP 48337 A,B, are spatially resolved, as shown in the unocculted subimage, and attenuated simultaneously. The locations of HIP 48337 A,B in the occulted image are each denoted by an 'x'. The band-limited mask axis is marked by a dashed line.

Cold dust around nearby stars (DUNES). First results. A resolved exo-Kuiper belt around the solar-like star ζ^2 Ret

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Astronomy & Astrophysics, in press (2010arXiv1005.3151E)

We present the first far-IR observations of the solar-type stars δ Pav, HR 8501, 51 Peg and ζ^2 Ret, taken within the context of the DUNES *Herschel* Open Time Key Programme (OTKP). This project uses the PACS and SPIRE instruments with the objective of studying infrared excesses due to exo-Kuiper belts around nearby solar-type stars. The observed 100 μm fluxes from δ Pav, HR 8501, and 51 Peg agree with the predicted photospheric fluxes, excluding debris disks brighter than $L_{\rm dust}/L_\star \sim 5 \times 10^{-7}$ (1 σ level) around those stars. A flattened, disk-like structure with a semi-major axis of $\sim$ 100 AU in size is detected around ζ^2 Ret. The resolved structure suggests the presence of an eccentric dust ring, which we interpret as an exo-Kuiper belt with $L_{\rm dust}/L_\star \approx 10^{-5}$.

Download/Website: `http://www.mpia-hd.mpg.de/DUNES/`

Metals in the exosphere of the highly-irradiated planet WASP-12 b

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Astrophysical Journal Letters, published (714L, 222)

We present near-UV transmission spectroscopy of the highly irradiated transiting exoplanet WASP-12 b, obtained with the Cosmic Origins Spectrograph (COS) on the Hubble Space Telescope (HST). The spectra cover three distinct wavelength ranges: NUVA (2539–2580 Å); NUVB (2655–2696 Å); and NUVC (2770–2811 Å). Three independent methods all reveal enhanced transit depths attributable to absorption by resonance lines of metals in the exosphere of WASP-12 b. Light curves of total counts in the NUVA and NUVC wavelength ranges show a detection at a 2.5σ level. We detect extra absorption in the Mg2 $\lambda\lambda$2800 resonance line cores at the 2.8σ level. The NUVA, NUVB and NUVC light curves imply effective radii of $2.69\pm0.24\,R_J$, $2.18\pm0.18\,R_J$, and $2.66\pm0.22\,R_J$ respectively, suggesting the planet is surrounded by an absorbing cloud which overfills the Roche lobe. We detect enhanced transit depths at the wavelengths of resonance lines of neutral sodium, tin and manganese, and at singly ionised ytterbium, scandium, manganese, aluminum, vanadium and magnesium. We also find the statistically expected number of anomalous transit depths at wavelengths not associated with any known resonance line. Our data are limited by photon noise, but taken as a whole the results are strong evidence for an extended absorbing exosphere surrounding the planet. The NUVA data exhibits an early ingress, contrary to model expectations; we speculate this could be due to the presence of a disk of previously stripped material.

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Co-evolution of atmospheres, life and climate

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Astrobiology, published (1005.3589)

After Earth's origin, our host star, the Sun, was shining 20 to 25 percent less brightly than today. Without greenhouse-like conditions to warm the atmosphere, our early planet would have been an ice ball and life may never have evolved. But life did evolve, which indicates that greenhouse gases must have been present on early Earth to warm the planet. Evidence from the geologic record indicates an abundance of the greenhouse gas CO2. CH4 was probably present as well, and in this regard methanogenic bacteria, which belong to a diverse group of anaerobic procaryotes that ferment CO 2 plus H2 to CH4, may have contributed to modification of the early atmosphere. Molecular oxygen was not present, as is indicated by the study of rocks from that era, which contain iron carbonate rather than iron oxide. Multicellular organisms originated as cells within colonies that became increasingly specialized. The development of photosynthesis allowed the Sun's energy to be harvested directly by life forms. The resultant oxygen accumulated in the atmosphere and formed the ozone layer in the upper atmosphere. Aided by the absorption of harmful UV radiation in the ozone layer, life colonized Earth's surface. Our own planet is a very good example of how life forms modified the atmosphere over the planets' life time. We show that these facts have to be taken into account when we discover and characterize atmospheres of Earth-like exoplanets. If life has originated and evolved on a planet, then it should be expected that a strong co-evolution occurred between life and the atmosphere, the result of which is the planets' climate.

The Roles of Tidal Evolution and Evaporative Mass Loss in the Origin of CoRoT-7 b

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Monthly Notices of the Royal Astronomical Society, in press (arXiv:1005.2186v1)

CoRoT-7 b is the first confirmed rocky exoplanet, but, with an orbital semi-major axis of 0.0172 AU, its origins may be unlike any rocky planet in our solar system. In this study, we consider the roles of tidal evolution and evaporative mass loss in CoRoT-7 b's history, which together have modified the planet's mass and orbit. If CoRoT-7 b has always been a rocky body, evaporation may have driven off almost half its original mass, but the mass loss may depend sensitively on the extent of tidal decay of its orbit. As tides caused CoRoT-7 b's orbit to decay, they brought the planet closer to its host star, thereby enhancing the mass loss rate. Such a large mass loss also suggests the possibility that CoRoT-7 b began as a gas giant planet and had its original atmosphere completely evaporated. In this case, we find that CoRoT-7 b's original mass probably didn't exceed 200 Earth masses (about 2/3 of a Jupiter mass). Tides raised on the host star by the planet may have significantly reduced the orbital semi-major axis, perhaps causing the planet to migrate through mean-motion resonances with the other planet in the system, CoRoT-7 c. The coupling between tidal evolution and mass loss may be important not only for CoRoT-7 b but also for other close-in exoplanets, and future studies of mass loss and orbital evolution may provide insight into the origin and fate of close-in planets, both rocky and gaseous.

Download/Website: `http://arxiv.org/abs/1005.2186`

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Giant Planet Occurrence in the Stellar Mass-Metallicity Plane

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PASP accepted, arXiv:1005.3084

Publications of the Astronomical Society of the PacificPublications of the Astronomical Society of the Pacific Correlations between stellar properties and the occurrence rate of exoplanets can be used to inform the target selection of future planet search efforts and provide valuable clues about the planet formation process. We analyze a sample of 1266 stars drawn from the California Planet Survey targets to determine the empirical functional form describing the likelihood of a star harboring a giant planet as a function of its mass and metallicity. Our stellar sample ranges from M dwarfs with masses as low as 0.2 $M_\odot$ to intermediate-mass subgiants with masses as high as 1.9 $M_\odot$. In agreement with previous studies, our sample exhibits a planet-metallicity correlation at all stellar masses; the fraction of stars that harbor giant planets scales as $f \propto 10^{1.2[\mathrm{Fe/H}]}$. We can rule out a flat metallicity relationship among our evolved stars (at 98% confidence), which argues that the high metallicities of stars with planets is not likely due to convective envelope "pollution." Our data also rule out a constant planet occurrence rate for [Fe/H] < 0, indicating that giant planets continue to become rarer at sub-Solar metallicities. We also find that planet occurrence increases with stellar mass ($f \propto M_\star$), characterized by a rise from 3% around M dwarfs (0.5 $M_\odot$) to 14% around A stars

($2\ M_{\odot}$), at Solar metallicity. We argue that the correlation between stellar properties and giant planet occurrence is strong supporting evidence of the core accretion model of planet formation.

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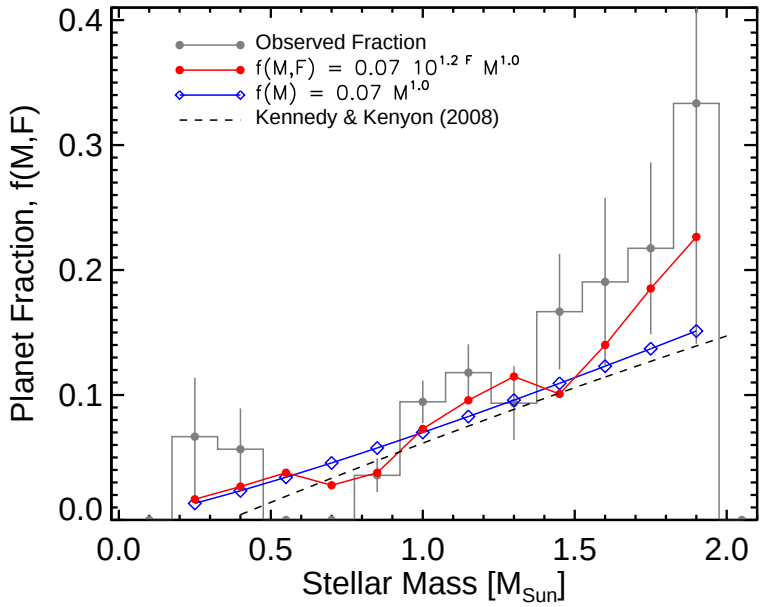

Figure 2: (Johnson et al.) Planet fraction ($f = N_{planets}/N_{stars}$) as a function of mass for our stellar sample (gray histogram). The red filled circles show the planet fraction predicted by Equation 1 for the masses and metallicities of the stars in each histogram bin. Note that we use a histogram only for visualization purposes; the data were fitted directly without binning. The open diamonds show the best-fitting relationship between planet fraction and stellar mass for [Fe/H] $= 0$. The dashed line shows the stellar mass relationship predicted by Kennedy & Kenyon (2008) for Solar metallicity.

Stability analysis of single planet systems and their habitable zones

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Astrophysical Journal, in press (arXiv:1005.0413)

We study the dynamical stability of planetary systems consisting of one hypothetical terrestrial mass planet (1 or $10M_{\oplus}$) and one massive planet ($10M_{\oplus} - 10M_{jup}$). We consider masses and orbits that cover the range of observed planetary system architectures (including non-zero initial eccentricities), determine the stability limit through N-body simulations, and compare it to the analytic Hill stability boundary. We show that for given masses and orbits of a two planet system, a single parameter, which can be calculated analytically, describes the Lagrange stability

boundary (no ejections or exchanges) but which diverges significantly from the Hill stability boundary. However, we do find that the actual boundary is fractal, and therefore we also identify a second parameter which demarcates the transition from stable to unstable evolution. We show the portions of the habitable zones of ρ CrB, HD 164922, GJ 674, and HD 7924 which can support a terrestrial planet. These analyses clarify the stability boundaries in exoplanetary systems and demonstrate that, for most exoplanetary systems, numerical simulations of the stability of potentially habitable planets are only necessary over a narrow region of parameter space. Finally we also identify and provide a catalog of known systems which can host terrestrial planets in their habitable zones.

Download/Website: `Catalog of stable habitable zones in observed single planet systems can be downloaded from http://gravity.psu.edu/~ravi/planets/`

Contact: `ravi@gravity.psu.edu`

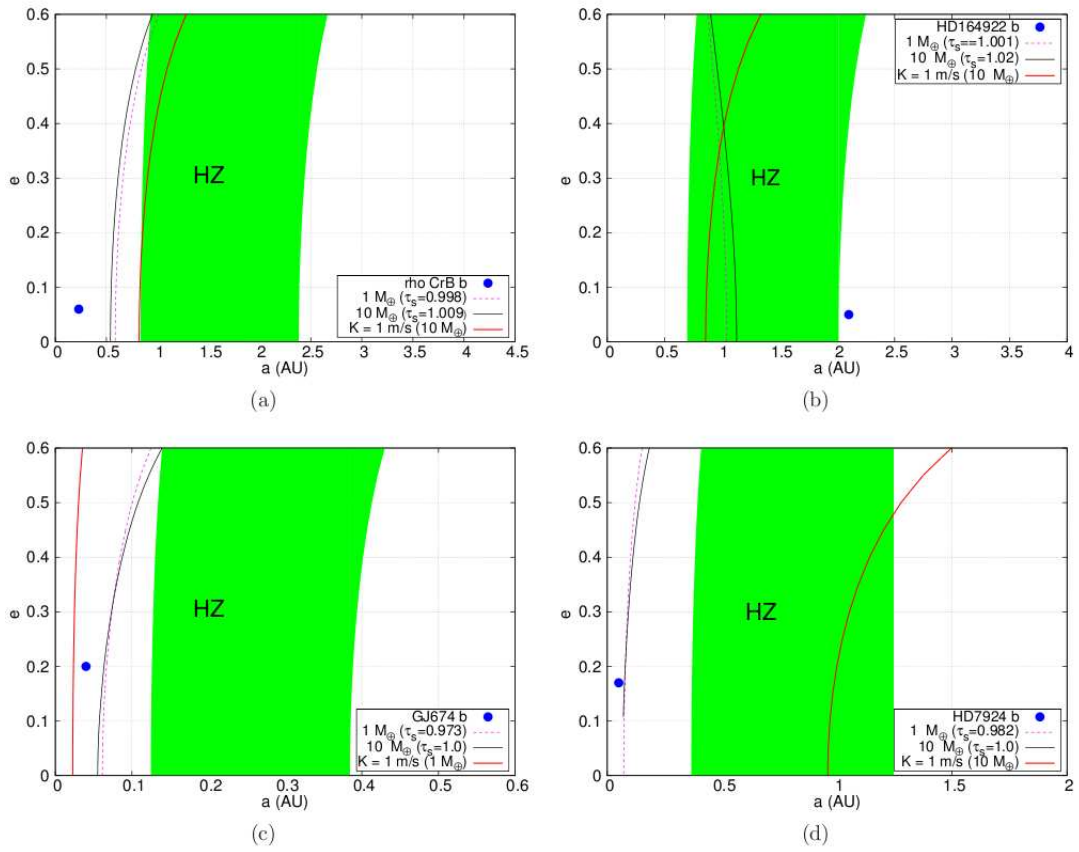

Figure 3: (Kopparapu & Barnes) Comparison of Lagrange stable regions and habitable zones for four known systems. The magenta curves represent stability boundary (τ_s) for a $1M_\oplus$ planet, black for $10M_\oplus$. For panels a, c and d, stable orbits lie to the right of these curves, but lie to the left in panel b. The red solid line shows the 1 ms^{-1} RV amplitude of a hypothetical terrestrial planet on a circular orbit. The green region is the HZ.

Photospheric activity, rotation, and radial velocity variations of the planet-hosting star CoRoT-7

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Astronomy & Astrophysics, in press (arXiv:1005.3602)

The CoRoT satellite has recently discovered the transits of a telluric planet across the disc of a late-type magnetically active star dubbed CoRoT-7, while a second planet has been detected after filtering out the radial velocity (hereafter RV) variations due to stellar activity. We investigate the magnetic activity of CoRoT-7 and use the results for a better understanding of the impact of magnetic activity on stellar RV variations. We derive the longitudinal distribution of active regions on CoRoT-7 from a maximum entropy spot model of the CoRoT light curve. Assuming that each active region consists of dark spots and bright faculae in a fixed proportion, we synthesize the expected RV variations. Active regions are mainly located at three active longitudes which appear to migrate at different rates, probably as a consequence of surface differential rotation, for which a lower limit of $\Delta\Omega/\Omega = 0.058 \pm 0.017$ is found. The synthesized activity-induced RV variations reproduce the amplitude of the observed RV curve and are used to study the impact of stellar activity on planetary detection. In spite of the non-simultaneous CoRoT and HARPS observations, our study confirms the validity of the method previously adopted to filter out RV variations induced by stellar activity. We find a false-alarm probability $< 10^{-4}$ that the RV oscillations attributed to CoRoT-7b and CoRoT-7c are spurious effects of noise and activity. Additionally, our model suggests that other periodicities found in the observed RV curve of CoRoT-7 could be explained by active regions whose visibility is modulated by a differential stellar rotation with periods ranging from 23.6 to 27.6 days.

Download/Website: `http://arxiv.org/abs/1005.3602`

Contact: `nuccio.lanza@oact.inaf.it`

3 Abstracts of theses

High Precision Astrometry with Adaptive Optics aided Imaging

E. Meyer
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PhD-Thesis, submitted, University of Heidelberg

Currently more than 450 exoplanets are known and this number increases nearly every day. Only a few constraints on their orbital parameters and physical characteristics can be determined, as most exoplanets are detected indirectly and one should therefore refer to them as exoplanet *candidates*. Measuring the astrometric signal of a planet or low mass companion by means of measuring the wobble of the host star yields the full set of orbital parameters. With this information the true masses of the planet candidates can be determined, making it possible to establish the candidates as real exoplanets, brown dwarfs or low mass stars. In the context of this thesis, an M-dwarf star with a brown dwarf candidate companion, discovered by radial velocity measurements, was observed within an astrometric monitoring program to detect the astrometric signal. Ground based adaptive optics aided imaging with the ESO/NACO instrument was used with the aim to establish its true nature (brown dwarf vs. star) and to investigate the prospects of this technique for exoplanet detection. The astrometric corrections necessary to perform high precision astrometry are described and their contribution to the overall precision is investigated. Due to large uncertainties in the pixel-scale and the orientation of the detector, no detection of the astrometric orbit signal was possible.
The image quality of ground-based telescopes is limited by the turbulence in Earth's atmosphere. The induced distortions of the light can be measured and corrected with the adaptive optics technique and nearly diffraction limited performance can be achieved. However, the correction is only useful within a small angle around the guide star in single guide star measurements. The novel correction technique of multi conjugated adaptive optics uses several guide stars to correct a larger field of view. The VLT/MAD instrument was built to demonstrate this technique. Observations with MAD are analyzed in terms of astrometric precision in this work. Two sets of data are compared, which were obtained in different correction modes: pure ground layer correction and full multi conjugated correction.

Download/Website: `http://arxiv.org/abs/1005.5091`

Contact: `meyer@mpia.de`

4 Conference announcements

Planetary Systems beyond the Main Sequence

U. Heber[1], *N. Soker*[2], *H. Drechsel*[1]
[1] Dr. Remeis-Sternwarte Bamberg, Sternwartstrae 7, 96049 Bamberg, Germany
[2] Department of Physics, Technion, Israel Institute for Technology, Haifa 32000, Israel

Bamberg, Germany, 11 - 14 August 2010

Planetary and brown dwarf companions to evolved stars have only recently been disxcovered. The aim of this conference is to discuss observational results and techniques as well as theoretical predictions for the formation and the fate of the orbiting substellar objects as well as for their impact on the evolution of the host stars. Supernova fall-back disks and planets around neutron stars shall also be discussed. Central to the conference is to explore the impact of new and upcoming space missions like Kepler, GAIA and PLATO for this emerging field.

Main topics

- Influence of planets on evolved stars
- The fate of planets
- The stability and habitability of planetary systems around evolved stars
- Debris disks around white dwarfs
- Planet formation around evolved stars
- Detecting substellar objects around evolved stars
- Substellar objects in binary stars

Registration is now open through: http://www.sternwarte.uni-erlangen.de/conf2010/registration.html.

Deadline for early registration is June 1, 2010.
The registration fee is 120.- Euro before June 1, 2010 and 180.- Euro thereafter.

For all other details see the webpage:
http://www.sternwarte.uni-erlangen.de/conf2010/

We are looking forward to meeting you next August in Bamberg.

Ulrich Heber and Noam Soker for the SOC
Horst Drechsel and Ulrich Heber for the LOC

Download/Website: `http://www.sternwarte.uni-erlangen.de/conf2010/`
Contact: `heber@sternwarte.uni-erlangen.de`

Exploring Strange New Worlds: From Gas Giants to Super Earths

Chas Beichman (SOC Chair)
NASA ExoPlanet Science Institute / Caltech, Mail Code 100-22, 770 South Wilson Avenue, Pasadena, CA, 91125

Flagstaff, Arizona, May 1-6, 2011

The NASA ExoPlanet Exploration Program will host the 6th in a series of international scientific conferences on the topic of present and future observations of exoplanets from space. The most recent conference in this roughly annual series was the highly successful Pathways conference in Barcelona. With co-sponsorship from the NASA ExoPlanet Science Institute (NExScI), the Spitzer Science Center (SSC), the Space Telescope Science Institute (STScI), and the European Blue Dot group, the conference will be held on May 1-6, 2011 and will present state-of-the art results from the Spitzer and Hubble Space Telescopes, the Kepler and CoRot transit missions, as well as relevant ground-based facilities. Noted theoreticians will provide perspective and interpretation of the observational results in terms of long term goals of the physical characterization of planets ranging in size from gas and icy giants, super Earths, and (ultimately) Earth analogs. Speakers will emphasize how observations of exoplanets help us to understand the formation and evolution of objects in our own solar system.

Speakers will also look toward the future with a focus on the exoplanet observations using the James Webb Space Telescope (JWST) and ESAs GAIA astrometric mission. Speakers from the 4 JWST instrument teams will address the capabilities of JWST for coronagraphy and transit follow-up. The conference will end with discussions of the exoplanet potential of missions and technologies endorsed by the ASTRO2010 Decadal Review and the steps being taken by NASAs Exoplanet Program to implement those recommendations. Similar discussions will be held on plans of other space agencies.

Past Conferences In this Series:

1st Heidelberg, 2003 (Toward Other Earths)

2nd San Diego, 2004 (Dust Disks and the Formation, Evolution and Detection of Habitable Planets)

3rd Nice, 2005 (IAU 200. Direct Imaging of Exoplanets: Science and Techniques)

4th Pasadena, 2006 (Star-Planet Interactions and Implications For Habitability)

5th Barcelona, 2009 (Pathways Toward Habitable Planets)

6th Flagstaff, 2011(Exploring Strange New Worlds)

Download/Website: `http://exep.jpl.nasa.gov/flagstaff2011/`

Contact: `Sign up on the website for info, or send an email message to sympa@list.jpl.nasa.gov with the subject "subscribe flagstaff2011announce"`

5 Announcements

Icarus editorial policy

Alessandro Morbidelli (Icarus co-editor)
Icarus

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The discovery of extra-solar planets and the study of their dynamical and physical properties have opened an exciting new field of planetary sciences. Icarus, the journal of the Division of Planetary Sciences (DPS) of the American Astronomical Society (AAS) and traditionally billed as "The International Journal of Solar System Studies", is pleased to announce that it will now also cover extra-solar planet studies. To mark this shift of emphasis, a new editor has been appointed for papers on exo-planets: Prof. Giovanna Tinetti of UCL, London. Icarus therefore encourages the extra-solar planet community to submit papers on the discovery, physical characterization and interior models of exo-planets and on dynamical studies of multi-planet systems. The editors hope that having papers on solar system studies and extra-solar planets in the same journal will favor interdisciplinary exchange and help to place planetary systems into a broader context. Icarus has no page charges, and maintains a rigorous system of two reviewers for all papers submitted. Color figures appear free of charge in the electronic issue, however, there is a charge for color figures in the print issue of Icarus.

Download/Website: `http://nexsci.caltech.edu/archives/koa`

Release of NIRSPEC Data via the Keck Observatory Archive (KOA)

Stephen R. Kane on behalf of the KOA team
NASA Exoplanet Science Institute/Caltech

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The Keck Observatory Archive (KOA), a NASA-funded collaboration between the NASA Exoplanet Science Institute (NExScI) and the W. M. Keck Observatory (WMKO), has been archiving data from the High Resolution Echelle Spectrograph (HIRES) since August 18, 2004.
We are pleased to announce that KOA now also serves data from the Near InfraRed echelle SPECtrograph (NIRSPEC), with archived data dating back to 1999. This first public release is for more than 900 nights of data which include $\sim 250,000$ raw science and calibration files. Example program titles from the released programs are:

- An Adaptive Optics Survey for Young Jovian-Mass Planets
- An M Dwarf Planetary Transit Candidate And A New M Dwarf Eclipsing Binary
- A search for planetary-mass companions to ultracool dwarfs

The complete list of released programs from both HIRES and NIRSPEC can be accessed via:
https://koa.ipac.caltech.edu/available_progtitl.html
PI's generally have proprietary access to their data for at least 18 months after the date of observation.

Download/Website: `http://nexsci.caltech.edu/archives/koa`

Contact: `https://koa.ipac.caltech.edu/applications/Helpdesk`

6 As seen on astro-ph

The following list contains all the entries relating to exoplanets that we spotted on astro-ph during April 2010. 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/1005.0293: **Stellar activity and magnetic shielding** by *J.-M. Griessmeier, M. Khodachenko, H. Lammer et al*

astro-ph/1005.0413: **Stability analysis of single planet systems and their habitable zones** by *Ravi kumar Kopparapu, Rory Barnes*

astro-ph/1005.0589: **Circulation and Dissipation on Hot Jupiter** by *Jason Li, Jeremy Goodman*

astro-ph/1005.0620: **Discovery of a stellar companion to the nearby solar-analogue HD 104304** by *Carolin Schnupp, Carolina Bergfors, Wolfgang Brandner et al*

astro-ph/1005.1017: **Spitzer Secondary Eclipses of WASP-18b** by *Sarah Nymeyer, Joseph Harrington, Ryan A. Hardy et al*

astro-ph/1005.1633: **Observations of Mass Loss from the Transiting Exoplanet HD 209458b** by *Jeffrey L. Linsky, Hao Yang, Kevin France et al*

astro-ph/1005.2009: **HAT-P-16b: A 4 Mj Planet Transiting A Bright Star On An Eccentric Orbit** by *L. A. Buchhave, G. A. Bakos, J. D. Hartman et al*

astro-ph/1005.2186: **The Roles of Tidal Evolution and Evaporative Mass Loss in the Origin of CoRoT-7 b** by *Brian Jackson, Neil Miller, Rory Barnes et al*

astro-ph/1005.2440: **Pressure-temperature Phase Diagram of the Earth** by *Eriita Jones, Charles Lineweaver*

astro-ph/1005.3017: **Tidally induced brown dwarf and planet formation in circumstellar discs** by *Ingo Thies, Pavel Kroupa, Simon P. Goodwin et al*

astro-ph/1005.3027: **Near-Infrared Thermal Emission from the Hot Jupiter TrES-2b: Ground-Based Detection of the Secondary Eclipse** by *Bryce Croll, Loic Albert, David Lafreniere et al*

astro-ph/1005.3084: **Giant Planet Occurrence in the Stellar Mass-Metallicity Plane** by *John Asher Johnson, Kimberly M. Aller, Andrew W. Howard et al*

astro-ph/1005.3208: **Improved stellar parameters of CoRoT-7** by *H. Bruntt, M. Deleuil, M. Fridlund et al*

astro-ph/1005.3523: **Thermodynamic Limits on Magnetodynamos in Rocky Exoplanets** by *Eric Gaidos, Clinton P. Conrad, Michael Manga et al*

astro-ph/1005.3588: **Oxidation of CO on surface hematite in high CO2 atmospheres** by *John Lee Grenfell, Joachim W. Stock, A. Beate C. Patzer et al*

astro-ph/1005.3589: **Co-evolution of atmospheres, life, and climate** by *John Lee Grenfell, Heike Rauer, Franck Selsis et al*

astro-ph/1005.3602: **Photospheric activity, rotation, and radial velocity variations of the planet-hosting star CoRoT-7** by *A. F. Lanza, A. S. Bonomo, C. Mou et al*

astro-ph/1005.3656: **Metals in the Exosphere of the Highly Irradiated Planet WASP-12b** by *L. Fossati, C. A. Haswell, C. S. Froning et al*

astro-ph/1005.3745: **On the dynamics of Extrasolar Planetary Systems under dissipation. Migration of planets** by *J. D. Hadjidemetriou, G. Voyatzis*

astro-ph/1005.4037: **Exoplanet Atmospheres** by *S. Seager, D. Deming*

astro-ph/1005.4039: **The Effects of Metallicity, and Grain Growth and Settling on the Early Evolution of Gaseous Protoplanets** by *Ravit Helled, Peter Bodenheimer*

astro-ph/1005.4497: **Mass Transfer, Transiting Stream and Magnetopause in Close-in Exoplanetary Systems with Applicatons to WASP-12** by *Dong Lai, Ch. Helling, E.P.J. van den Heuvel*

astro-ph/1005.4551: **Line-profile tomography of exoplanet transits – II. A gas-giant planet transiting a rapidly-**

rotating A5 star by *A. Collier Cameron, E. Guenther, B. Smalley et al*

astro-ph/1005.5095: **Analysis of radial velocity variations in multiple planetary systems** by *Andras Pal*

astro-ph/1005.5098: **Is Gliese 581d habitable? Some constraints from radiative-convective climate modeling** by *R. Wordsworth, F. Forget, F. Selsis et al*

astro-ph/1005.5300: **HAT-P-15b: A 10.9-day Extrasolar Planet Transiting a Solar-type Sta** by *G. Kovacs, G. A.Bakos, J. D. Hartman et al*

Disks

astro-ph/1005.1048: **Warm molecular gas and kinematics in the disc around HD 100546** by *O. Panic, E. F. van Dishoeck, M. R. Hogerheijde*

astro-ph/1005.1660: **Vortices as Nurseries for Planetesimal Formation in Protoplanetary Discs** by *Kevin Heng, Scott J. Kenyon*

astro-ph/1005.2536: **Planetary Growth with Collisional Fragmentation and Gas Drag** by *Hiroshi Kobayashi, Hidekazu Tanaka, Alexander V. Krivov et al*

astro-ph/1005.2591: **Locating the planetesimals belts in the multiple-planet systems HD 128311, HD 202206, HD 82943 and HR 8799** by *Amaya Moro-Martin, Renu Malhotra, Geoffrey Bryden et al*

astro-ph/1005.3151: **Cold dust around nearby stars (DUNES). First results: A resolved exo-Kuiper belt around the solar-like star ζ^2 Ret** by *C. Eiroa, D. Fedele, J. Maldonado et al*

astro-ph/1005.3215: **Kuiper Belts Around Nearby Stars** by *R. Nilsson, R. Liseau, A. Brandeker et al*

astro-ph/1005.3137: **Resolving the cold debris disc around a planet-hosting star: PACS photometric imaging observations of q1 Eri (HD10647, HR506)** by *R. Liseau, C. Eiroa, D. Fedele et al*

astro-ph/1005.3414: **Galactic tide and some properties of the Oort cloud** by *J. Klacka, L. Komar, P. Pas*

astro-ph/1005.3543: **The Vega Debris Disc: A view from Herschel** by *B. Sibthorpe, B.Vandenbussche, J. S.Greaves et al*

astro-ph/1005.3744: **Stellar Motion Induced by Gravitational Instabilities in Protoplanetary Disks** by *Scott Michael, R. H. Durisen*

astro-ph/1005.3826: **The Herschel view of Gas in Protoplanetary Systems (GASPS). First comparisons with a large grid of models** by *C. Pinte, P. Woitke, F. Menard et al*

astro-ph/1005.3828: **Gas in the protoplanetary disc of HD 169142: Herschel's view** by *G. Meeus, C. Pinte, P. Woitke et al*

astro-ph/1005.3864: **Gas in Protoplanetary Discs (GASPS) 1. First results** by *G. S. Mathews, W. R. F. Dent, J. P. Williams et al*

astro-ph/1005.5162: **Imaging of a Transitional Disk Gap in Reflected Light: Indications of Planet Formation Around the Young Solar Analog LkCa 15** by *C. Thalmann, C. A. Grady, M. Goto et al*

astro-ph/1005.5147: **Resolving debris discs in the far-infrared: early highlights from the DEBRIS survey** by *DEBRIS Collaboration: Brenda Matthews, Bruce Sibthorpe, Grant Kennedy et al*

Instrumentation and Techniques

astro-ph/1005.0346: **Photometric and Spectral Signatures of 3D Models of Transiting Giant Exoplanets** by *Adam Burrows, Emily Rauscher, David Spiegel et al*

astro-ph/1005.0770: **Detectability of Exoplanets in the Beta Pic Moving Group with the Gemini Planet Imager** by *Tiffany Kataria, Michal Simon*

astro-ph/1005.1663: **The Detectability of Transit Depth Variations due to Exoplanetary Oblateness and Spin Precession** by *Joshua A. Carter, Joshua N. Winn*

astro-ph/1005.2391: **Viability of a Mission to Characterize Exo-Earths Using JWST plus a Starshade External Occulter** by *Joseph Catanzarite, Michael Shao*

astro-ph/1005.2930: **Ruling Out Possible Secondary Stars to Exoplanet Host Stars Using the CHARA Array** by *Ellyn K. Baines, Harold A. McAlister, Theo A. ten Brummelaar et al*

astro-ph/1005.3021: **Finite-source and finite-lens effects in astrometric microlensing** by *C.-H. Lee, S. Seitz, A. Riffeser et al*

astro-ph/1005.3496: **Pulsations and planets: the asteroseismology-extrasolar-planet connection** by *Sonja Schuh*

astro-ph/1005.4415: **Achieving better than one-minute accuracy in the Heliocentric and Barycentric Julian Dates** by *Jason Eastman, Robert Siverd, B. Scott Gaudi*

astro-ph/1005.4764: **Reconstructing the solar integrated radial velocity using MDI/SOHO** by *Nadege Meunier, Anne-Marie Lagrange, Morgan De*

astro-ph/1005.4888: **Astrometric jitter of the sun as a star** by *V.V. Makarov, D. Parker, R.K. Ulrich*

astro-ph/1005.5091: **High Precision Astrometry with Adaptive Optics aided Imaging** by *Eva Meyer*

astro-ph/1005.5396: **Systemic: A Testbed for Characterizing the Detection of Extrasolar Planets. II. Numerical approaches to the Transit Timing Inverse Problem** by *Stefano Meschiari, Gregory Laughlin*

astro-ph/1005.5664: **Theory of Dispersed Fixed-Delay Interferometry for Radial Velocity Exoplanet Searches** by *Julian C. van Eyken, Jian Ge, Suvrath Mahadevan*