ExoPlanet News
An Electronic Newsletter

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Contents

1 Editorial

Welcome to the twenty-second 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 October 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

An interferometric study of the Fomalhaut inner debris disk I. Near-infrared detection of hot dust with VLTI/VINCI

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Astrophysical Journal, in press (arXiv:0908.3133)

The innermost parts of dusty debris disks around main sequence stars are currently poorly known due to the high contrast and small angular separation with their parent stars. Using near-infrared interferometry, we aim to detect the signature of hot dust around the nearby A4 V star Fomalhaut, which has already been suggested to harbor a warm dust population in addition to a cold dust ring located at about 140 AU. Archival data obtained with the VINCI instrument at the VLTI are used to study the fringe visibility of the Fomalhaut system at projected baseline lengths ranging from 4 m to 140 m in the K band. A significant visibility deficit is observed at short baselines with respect to the expected visibility of the sole stellar photosphere. This is interpreted as the signature of resolved circumstellar emission, producing a relative flux of $0.88\% \pm 0.12\%$ with respect to the stellar photosphere. While our interferometric data cannot directly constrain the morphology of the excess emission source, complementary data from the literature allow us to discard an off-axis point-like object as the source of circumstellar emission. We argue that the thermal emission from hot dusty grains located within 6 AU from Fomalhaut is the most plausible explanation for the detected excess. Our study also provides a revised limb-darkened diameter for Fomalhaut ($\theta_{\rm LD} = 2.223 \pm 0.022$ mas), taking into account the effect of the resolved circumstellar emission.

Download/Website: `http://arxiv.org/abs/0908.3133`

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The spin-orbit alignment of the Fomalhaut planetary system probed by optical long baseline interferometry

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Astronomy & Astrophysics, published (2009A&A...498L..41L)

Aims: We discuss the spin-orbit orientation of the Fomalhaut planetary system composed of a central A4V star, a debris disk, and a recently discovered planetary companion.
Methods: We use spectrally resolved, optical long baseline interferometric observations to obtain a precise spectro-astrometric measurement across the Br-γ absorption line. The achieved astrometric accuracy of 5 μas and the spectral resolution $R = 1300$ from the AMBER/VLTI instrument allow us to spatially and spectrally resolve the rotating photosphere.
Results: We find a position angle $\mathrm{PA_{star}} = 155^\circ \pm 3^\circ$ for the stellar photosphere, perfectly compatible with the literature measurement for the disk position angle ($\mathrm{PA_{disk}} = 156.0^\circ \pm 0.3^\circ$). The quality of our data does not allow the inclination angle of the photosphere to be constrained. Therefore our data set provides strong evidence for, but no definite proof of, a good alignment of the stellar spin axis with the perpendicular to the circumstellar disk plane. Additionally, we discuss how our spectro-interferometric measurements of the stellar photosphere can indirectly constrain the physical properties of the circumstellar material (dust grains and planets).
Conclusions: Our observations continue to validate the classical scenario to form stars and planets, in which the angular momentum of the planetary systems are expected to be collinear with the stellar spins.

Download/Website: `http://adsabs.harvard.edu/abs/2009A%26A...498L..41L`

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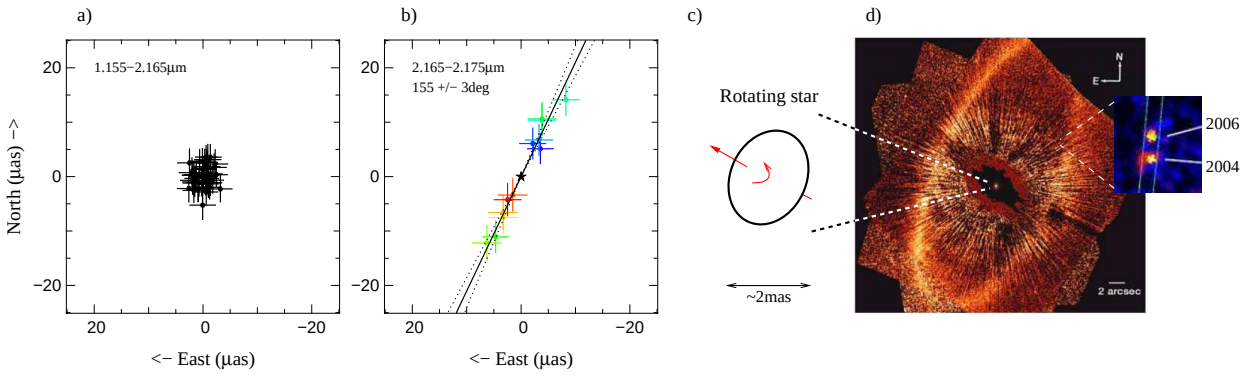

Figure 1: (Le Bouquin et al.) AMBER spectro-astrometric shift in the continuum (a) and across the Br-γ absorption line (b). Colours represent the position within the line, from blue to red. The signature of the rotating photosphere (c) is clearly detected and is compared to the debris disk and the planetary companion (d) imaged in the visible domain by Kalas et al. (2008).

WASP-17b: an ultra-low density planet in a probable retrograde orbit

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Astrophysical Journal, in press (arXiv:0908.1553)

We report the discovery of the transiting giant planet WASP-17b, the least-dense planet currently known. It is 1.6 Saturn masses but 1.5–2 Jupiter radii, giving a density of 6–14 per cent that of Jupiter. WASP-17b is in a 3.7-day orbit around a sub-solar metallicity, V = 11.6, F6 star. Preliminary detection of the Rossiter–McLaughlin effect suggests that WASP-17b is in a retrograde orbit ($\lambda \approx -150$ deg), indicative of a violent history involving planet–planet or planet–star scattering.

WASP-17b's bloated radius could be due to tidal heating resulting from recent or ongoing tidal circularisation of an eccentric orbit, such as the highly eccentric orbits that typically result from scattering interactions. It will thus be important to determine more precisely the current orbital eccentricity by further high-precision radial velocity measurements or by timing the secondary eclipse, both to reduce the uncertainty on the planet's radius and to test tidal-heating models. Owing to its low surface gravity, WASP-17b's atmosphere has the largest scale height of any known planet, making it a good target for transmission spectroscopy.

Download/Website: `http://arxiv.org/abs/0908.1553`

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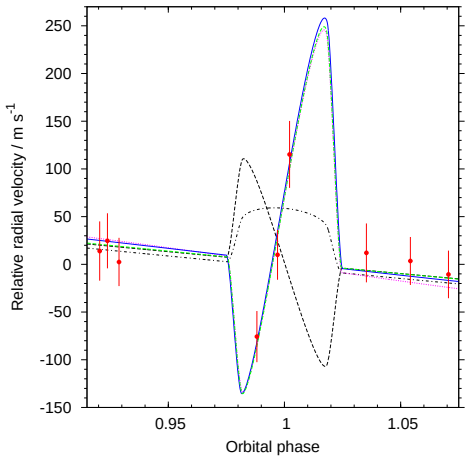

Figure 2: (Anderson et al.) The spectroscopic transit of WASP-17b. The red circles are the CORALIE radial velocity measurements and the coloured lines are the best-fitting models to the combined dataset. The best-fitting sky-projected angle between the stellar spin axis and the planetary orbit axis is $\lambda \approx -150$ deg, suggesting WASP-17b's orbit is retrograde. We show for comparison the signal expected from perpendicular ($\lambda = -90$ deg; black, dot-dashed line) and aligned ($\lambda = 0$ deg; black, dashed line) spin-orbit axes.

WASP-16b: A new Jupiter-like planet transiting a southern solar analog

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Astrophysical Journal, in press (arXiv:0908.0297)

We report the discovery from WASP-South of a new Jupiter-like extrasolar planet, WASP-16b, which transits its solar analog host star every 3.12 days. Analysis of the transit photometry and radial velocity spectroscopic data leads to a planet with $R_{\rm p} = 1.008 \pm 0.071 {\rm R}_{\rm Jup}$ and $M_{\rm p} = 0.855 \pm 0.059 {\rm M}_{\rm Jup}$, orbiting a host star with $R_* = 0.946 \pm 0.054 {\rm R}_\odot$ and $M_* = 1.022 \pm 0.101 {\rm M}_\odot$. Comparison of the high resolution stellar spectrum with synthetic spectra and stellar evolution models indicates the host star is a near-solar metallicity ([Fe/H]$= 0.01 \pm 0.10$) solar analog ($T_{\rm eff} = 5700 \pm 150$ K and $\log g = 4.5 \pm 0.2$) of intermediate age ($\tau = 2.3^{+5.8}_{-2.2}$ Gyr).

Download/Website: `http://xxx.lanl.gov/abs/0908.0297`

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C2D Spitzer-IRS spectra of disks around T Tauri stars IV. Crystalline silicates

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Astronomy & Astrophysics, accepted (arXiv:0908.4153)

Dust grains in the planet forming regions around young stars are expected to be heavily processed due to coagulation, fragmentation and crystallization. This paper focuses on the crystalline silicate dust grains in protoplanetary disks, for a statistically significant number of TTauri stars (96). As part of the Cores to Disks (c2d) Legacy Program, we obtained more than a hundred Spitzer/IRS spectra of TTauri stars, over a spectral range of 5–35 μm where

many silicate amorphous and crystalline solid-state features are present. At these wavelengths, observations probe the upper layers of accretion disks up to distances of a dozen AU from the central object. More than 3/4 of our objects show at least one crystalline silicate emission feature that can be essentially attributed to Mg-rich silicates. Fe-rich crystalline silicates are largely absent in the c2d IRS spectra. The strength and detection frequency of the crystalline features seen at $\lambda > 20\,\mu$m correlate with each other, while they are largely uncorrelated with the observational properties of the amorphous silicate $10\,\mu$m feature. This supports the idea that the IRS spectra essentially probe two independent disk regions: a warm zone ($\leq$1 AU) emitting at $\lambda \sim 10\,\mu$m and a much colder region emitting at $\lambda > 20\,\mu$m ($\leq$10 AU). We identify a *crystallinity paradox*, as the long-wavelength ($\lambda > 20\,\mu$m) crystalline silicate features are 3.5 times more frequently detected ($\sim$55% vs. $\sim$15%) than the crystalline features arising from much warmer disk regions ($\lambda \sim 10\,\mu$m). This suggests that the disk has an inhomogeneous dust composition within $\sim$10 AU. The analysis of the shape and strength of both the amorphous $10\,\mu$m feature and the crystalline feature around $23\,\mu$m provides evidence for the prevalence of μm-sized (amorphous and crystalline) grains in upper layers of disks. The abundant crystalline silicates found far from their presumed formation regions suggests efficient outward radial transport mechanisms in the disks around TTauri disks. The presence of μm-sized grains in disk atmospheres, despite the short time-scales for settling to the midplane, suggests efficient (turbulent) vertical diffusion, likely accompanied by grain-grain fragmentation to balance the efficient growth expected. In this scenario, the depletion of submicron-sized grains in the upper layers of the disks points toward removal mechanisms such as stellar winds or radiation pressure.

Download/Website: `http://arxiv.org/abs/0908.4153`

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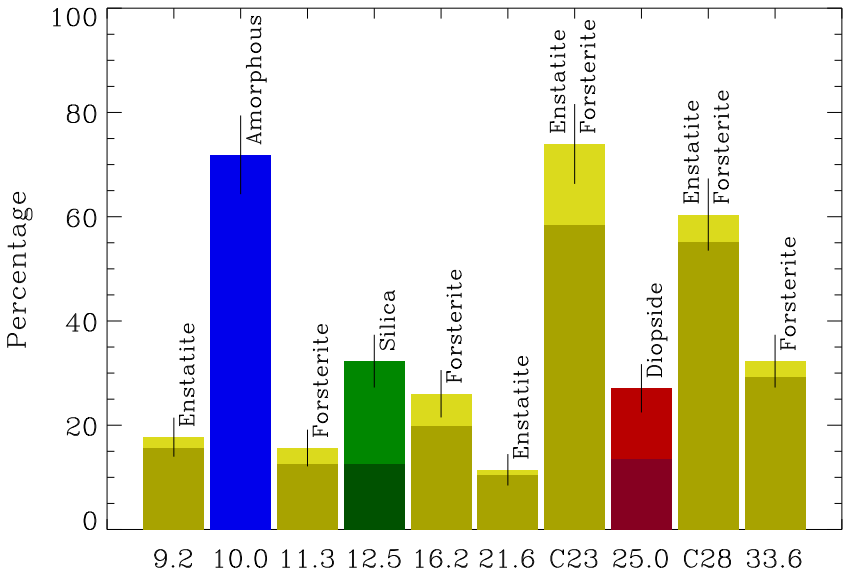

Figure 3: (Olofsson et al.) Detection statistics for 96 Class II objects, for crystalline silicate features (yellow and red bars) for the $10.0\,\mu$m amorphous silicate feature (blue) and for silica at $12.5\,\mu$m (green). C23 and C28 features are complexes (blends of enstatite plus forsterite features). Darker color bars are positive detections (SNR > 20), and lighter color bars stand for tentative detections (SNR ≤ 20). The uncertainties are those due to Poisson statistics.

Decimetre dust aggregates in protoplanetary discs

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Astronomy & Astrophysics, in press, DOI: 10.1051/0004-6361/200912027

The growth of planetesimals is an essential step in planet formation. Decimetre-size dust agglomerates mark a transition point in this growth process. In laboratory experiments we simulated the formation, evolution and properties of decimetre scale dusty bodies in protoplanetary discs.
Small sub-mm size dust aggregates consisting of micron size SiO_2 particles did randomly interact with dust targets of varying initial conditions in a continuous sequence of independent collisions. Impact velocities were 7.7 m/s on average and in the range expected for collisions with decimetre bodies in protoplanetary discs.
The targets all evolved by forming dust *crusts* with up to several cm thickness and a unique filling factor of 31 % $\pm$3 %. A part of the projectiles directly sticks. Additional, some projectile fragments slowly return to the target by gravity. All initially porous parts of the surface, i.e. built from the slowly returning fragments, get compacted and firmly attached to the underlying dust layers by the subsequent impacts. Growth is possible at impact angles from 0° (central collision) to 70°. No growth occurs at steeper dust surfaces. We measured the velocity, angle, and size distribution of collision fragments. The average restitution coefficient is 3.8 % or 0.29 m/s ejection velocity. Ejecta sizes are comparable to the projectile sizes.
The high filling factor is close to the most compact configuration of dust aggregates by local compression ($\sim 33\%$). This implies that the history of the surface formation and target growth is completely erased. In view of this, the filling factor of 31% seems to be a universal value in the collision experiments of all self-consistently evolving targets at the given impact velocities. We suggest that decimetre and probably larger bodies can simply be characterized by one single filling factor. While gravity dominates re-accretion in the experiments, at the given low ejection velocities, small fragments will be re-accreted as well in protoplanetary discs by gas drag. The accretion efficiency in planetesimal growth is model dependent. However, a small fraction of small particles re-accreted by gas flow or direct sticking readily allows growth of dusty bodies in protoplanetary discs in the decimetre range.The growth of planetesimals is an essential step in planet formation. Decimetre-size dust agglomerates mark a transition point in this growth process. In laboratory experiments we simulated the formation, evolution and properties of decimetre scale dusty bodies in protoplanetary discs.

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Energetic Protons, Radionuclides and Magnetic Activity in Protostellar Disks

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Astrophysical Journal, in press (arXiv:0908.3874)

We calculate the location of the magnetically-inactive dead zone in the minimum-mass protosolar disk, under ionization scenarios including stellar X-rays, long- or short-lived radionuclide decay, and energetic protons arriving from the general interstellar medium, from a nearby supernova explosion, from the disk corona, or from the corona of the young star. The disk contains a dead zone in all scenarios except those with small dust grains removed and a fraction of the short-lived radionuclides remaining in the gas. All the cases without exception have an "undead zone" where intermediate resistivities prevent magneto-rotational turbulence while allowing shear-generated large-scale magnetic fields. The mass column in the undead zone is typically greater than the column in the turbulent surface layers. The results support the idea that the dead and undead zones are robust consequences of cold, dusty gas with mass columns exceeding 1000 g cm^{-2}.

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Dust in brown dwarfs and extra-solar planets II. Cloud formation for cosmologically evolving abundances

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Astronomy & Astrophysics, in press (arXiv:0908.3597)

Substellar objects have extremely long life-spans. The cosmological consequence for older objects are low abundances of heavy elements, which results in a wide distribution of objects over metallicity, hence over age. Within their cool atmosphere, dust clouds become a dominant feature, affecting the opacity and the remaining gas phase abundance of heavy elements. We investigate the influence of the stellar metallicity on the dust formation in substellar atmospheres and on the dust cloud structure and its feedback on the atmosphere. This work has implications for the general question of star formation and of dust formation in the early universe.
We utilize numerical simulations in which we solve a set of moment equations in order to determine the quasi-static dust cloud structure (DRIFT). These equations model the nucleation, the kinetic growth of composite particles, their evaporation and the gravitational settling as a stationary dust formation process. Element conservation equations augment this system of equations including the element replenishment by convective overshooting. The integration with an atmosphere code (PHOENIX) allows to determine a consistent $(T, p, v_{\rm conv})$-structure (T - local temperature, p - local pressure, $v_{\rm conv}$ - convective velocity), and, hence, also to calculate synthetic spectra.
A grid of DRIFT-PHOENIX model atmospheres was calculated for a wide range of metallicity, [M/H] $\in$ [+0.5,-0.0,-0.5,...,-6.0], to allow for a systematic study of atmospheric cloud structures throughout the evolution of the universe. We find dust clouds in even the most metal-poor ([M/H]=-6.0) atmosphere of brown dwarfs. Only the most massive among the youngest brown dwarfs and giant gas planets can resist dust formation. For very low heavy element abundances, a temperature inversion develops which has a drastic impact on the dust cloud structure.
The combination of metal depletion by dust formation and the uncertainty of interior element abundances makes the modeling of substellar atmospheres an intricate problem in particular for old substellar objects. We further show that the dust-to-gas ratio does *not* scale linearly with the object's [M/H] for a given effective temperature. The mean grain sizes and the composition of the grains change depending on [M/H] which influences the dust opacity that determines radiative heating and cooling as well as the spectral appearance.

Download/Website: `http://arXiv.org/abs/0908.3597`

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The M dwarf planet search programme at the ESO VLT + UVES: A search for terrestrial planets in the habitable zone of M dwarfs

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Astronomy & Astrophysics, in press (arXiv:0908.0944)

We present radial velocity (RV) measurements of our sample of 40 M dwarfs from our planet search programme with VLT+UVES begun in 2000. Although with our RV precision down to 2–2.5 m/s and timebase line of up to 7 years, we are capable of finding planets of a few Earth masses in the close-in habitable zones of M dwarfs, there is no detection of a planetary companion. To demonstrate this we present mass detection limits allowing us to exclude Jupiter-mass planets up to 1 AU for most of our sample stars. We identified 6 M dwarfs that host a brown dwarf or low-mass stellar companion. With the exception of these, all other sample stars show low RV variability with an rms < 20 m/s. Some high proper motion stars exhibit a linear RV trend consistent with their

secular acceleration. Furthermore, we examine our data sets for a possible correlation between RVs and stellar activity as seen in variations of the Hα line strength. For Barnard's star we found a significant anticorrelation, but most of the sample stars do not show such a correlation.

Download/Website: `http://arxiv.org/abs/0908.0944`

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Water in HD 209458b's atmosphere from 3.6 $-$ 8 μm IRAC photometric observations in primary transit

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MNRAS, submitted, astro-ph arXiv:0909.0185

The hot Jupiter HD 209458b was observed during primary transit at 3.6, 4.5, 5.8 and 8.0 μm using the Infrared Array Camera (IRAC) on the Spitzer Space Telescope. We detail here the procedures we adopted to correct for the systematic trends present in the IRAC data. The lightcurves were fitted including limb darkening effects and fitted using Markov Chain Monte Carlo and prayer-bead Monte Carlo techniques, finding almost identical results. The final depth measurements obtained by a combined Markov Chain Monte Carlo fit are at 3.6 μm, 1.469 ± 0.013 % and 1.448 ± 0.013 %; at 4.5 μm, 1.478 ± 0.017 % ; at 5.8 μm, 1.549 ± 0.015 % and at 8.0 μm 1.535 ± 0.011 %. Our results clearly indicate the presence of water in the planetary atmosphere. Our broad band photometric measurements with IRAC prevent us from determining the additional presence of other other molecules such as CO, CO_2 and methane for which spectroscopy is needed. While water vapour with a mixing ratio of $10^{-4} - 10^{-3}$ combined with thermal profiles retrieved from the day-side may provide a very good fit to our observations, this data set alone is unable to resolve completely the degeneracy between water abundance and atmospheric thermal profile.

Download/Website: `http://arxiv.org/abs/0909.0185`

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3 Jobs and positions

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`

4 Announcements

The Keck Observatory Archive (KOA) Latest Data Release

Stephen R. Kane on behalf of the KOA team
NASA Exoplanet Science Institute/Caltech 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 archives HIRES spectra extracted from data measured over 1261 nights between 1994 and 2004. As of August 20, 2009, data from 678 programs over 1943 nights have been released. The released programs include more than 75 separate exoplanet related programs, comprising more than 500 nights of observations. Example program titles are:

- A Radial Velocity Search for Short-Period Planets Around High Metallicity Stars
- Extrasolar Planets Around Nearby Low-Mass Stars
- Jupiter Analogs: Is our Solar System Unusual?

The complete list of released programs can be accessed via:
https://koa.ipac.caltech.edu/available_progtitl.html

Altogether, KOA now archives raw data and extracted HIRES spectra from 2218 nights from 1994 to 2009. The total volume of data archived is 4.8 TB. PI's generally have proprietary access to their data for at least 18 months after the date of observation. Note that the extracted spectra provided by KOA are intended as browse products and will not necessarily be suitable for a given science application.

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

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

5 As seen on astro-ph

The following list contains all the entries relating to exoplanets that we spotted on astro-ph during August 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/0908.0241: **Transiting exoplanets from the CoRoT space mission VIII. CoRoT-7b: the first Super-Earth with measured radius** by *A. Leger et al.*
astro-ph/0908.0297: **WASP-16b: A new Jupiter-like planet transiting a southern solar analog** by *T. A. Lister et al.*
astro-ph/0908.0519: **Exoplanetary Transit Constraints Based Upon Secondary Eclipse Observations** by *Stephen R. Kane & Kaspar von Braun*
astro-ph/0908.0529: **Sub-Saturn Planet MOA-2008-BLG-310Lb: Likely To Be In The Galactic Bulge** by *Julia Janczak et al.*

astro-ph/0908.0736: **The Pulsar Planets: A Test Case of Terrestrial Planet Assembly** by *Brad Hansen, Hsin-Yi Shih, Thayne Currie*
astro-ph/0908.0803: **Planet formation in highly inclined binaries** by *F. Marzari, P. Thebault, H. Scholl*
astro-ph/0908.0944: **The M dwarf planet search programme at the ESO VLT + UVES. A search for terrestrial planets in the habitable zone of M dwarfs** by *M. Zechmeister, M. Kürster, M. Endl*
astro-ph/0908.1479: **The CORALIE survey for southern extrasolar planets. XVI. Discovery of a planetary system around HD 147018 and of two long period and massive planets orbiting HD 171238 and HD 204313** by *D. Segransan, et al.*
astro-ph/0908.1553: **WASP-17b: an ultra-low density planet in a probable retrograde orbit** by *D. R. Anderson et al.*
astro-ph/0908.1596: **Five planets and an independent confirmation of HD 196885Ab from Lick Observatory** by *D. A. Fischer et al.*
astro-ph/0908.1612: **Two Exoplanets Discovered at Keck Observatory** by *J. A. Valenti et al.*
astro-ph/0908.1672: **HAT-P-7: A Retrograde or Polar Orbit, and a Third Body** by *Joshua N. Winn et al.*
astro-ph/0908.1673: **First Evidence of a Retrograde Orbit of Transiting Exoplanet HAT-P-7b** by *Norio Narita et al.*
astro-ph/0908.1705: **Refined stellar, orbital and planetary parameters of the eccentric HAT-P-2 planetary system** by *András Pál et al.*
astro-ph/0908.1753: **Planetary companions around the K giant stars 11 UMi and HD 32518** by *M. P. Döllinger et al.*
astro-ph/0908.1977: **The 8 Micron Phase Variation of the Hot Saturn HD 149026b** by *Heather A. Knutsonet al.*
astro-ph/0908.2329: **A Stellar Flare during the Transit of the Extrasolar Planet OGLE-TR-10b** by *Samuel Bentley et al.*
astro-ph/0908.3032: **The spin-orbit angle of CoRoT-1: evidence for a strongly misaligned hot Jupiter** by *F. Pont et al.*
astro-ph/0908.3294: **Sensitivity of rocky planet structures to the equation of state** by *Damian C. Swift*
astro-ph/0908.3328: **Formation, Dynamical Evolution, and Habitability of Planets in Binary Star Systems** by *Nader Haghighipour*
astro-ph/0908.3597: **Dust in brown dwarfs and extra-solar planets II. Cloud formation for cosmologically evolving abundances** by *S. Witte, Ch. Helling & P.H. Hauschildt*
astro-ph/0908.4010: **Water, Methane, and Carbon Dioxide Present in the Dayside Spectrum of the Exoplanet HD 209458b** by *M. Swain*
astro-ph/0908.4412: **The Stability and Prospects of the Detection of Terrestrial/Habitable Planets in Multiplanet and Multiple Star Systems** by *Nader Haghighipour*
astro-ph/0908.4521: **Extrasolar planets and brown dwarfs around A-F type stars - VII. Theta Cygni radial velocity variations: planets or stellar phenomenon?** by *M. Desort et al.*

Disks

astro-ph/0908.0332: **Beta Viscose Prescription in Self-Gravitating Disks** by *S. Abbassi & J. Ghanbari*
astro-ph/0908.0743: **Formation of the Terrestrial Planets from a Narrow Annulus** by *Brad Hansen*
astro-ph/0908.0808: **On the eccentricity of self-gravitating circumstellar disks in eccentric binary systems** by *F. Marzari et al.*
astro-ph/0908.1380: **Migration of Extrasolar Planets: Effects from X-Wind Accretion Disks** by *Fred C. Adams, Mike J. Cai, Susana Lizano*
astro-ph/0908.1398: **Dynamical evolution of thin dispersion-dominated planetesimal disks** by *Roman R. Rafikov, Zachary S. Slepian*
astro-ph/0908.1575: **Dust-Dust Collisional Charging and Lightning in Protoplanetary Discs** by *Takayuki Muranushi*

astro-ph/0908.1622: **Accretion Rates of Planetesimals by Protoplanets Embedded in Nebular Gas** by *Takayuki Tanigawa, Keiji Ohtsuki*
astro-ph/0908.1863: **Planet migration in three-dimensional radiative discs** by *Willy Kley, Bertram Bitsch, Hubert Klahr*
astro-ph/0908.2127: **Collisional grooming of debris disks** by *Mark J. Kuchner & Christopher C. Stark*
astro-ph/0908.2367: **Evidence for Disk Photoevaporation Driven by the Central Star** by *Ilaria Pascucci, Michael Sterzik*
astro-ph/0908.3133: **An interferometric study of the Fomalhaut inner debris disk I. Near-infrared detection of hot dust with VLTI/VINCI** by *O. Absil et al.*
astro-ph/0908.3546: **N-Body Simulation of Planetesimal Formation through Gravitational Instability and Coagulation. II. Accretion Model** by *Shugo Michikoshi, Eiichiro Kokubo, Shu-ichiro Inutsuka*
astro-ph/0908.3708: **The Chemical Evolution of Protoplanetary Disks** by *Edwin A. Bergin*
astro-ph/0908.3874: **Energetic protons, radionuclides and magnetic activity in protostellar disks** by *N.J. Turner & J.F. Drake*
astro-ph/0908.3953: **The study of debris disks with SPICA** by *Amaya Moro-Martin*
astro-ph/0908.4153: **C2D Spitzer-IRS spectra of disks around T Tauri stars IV. Crystalline silicates** by *J. Olofsson et al.*

Instrumentation and Techniques

astro-ph/0908.1116: **Precision multi-epoch astrometry with VLT cameras FORS1/2** by *P. F. Lazorenko et al.*
astro-ph/0908.1172: **Rate and nature of false positives in the CoRoT exoplanet search** by *J.M. Almenara, H.J. Deeg et al.*
astro-ph/0908.1292: **On fitting planetary systems in counter-revolving configurations** by *Julie Gayon-Markt & Eric Bois*
astro-ph/0908.2997: **A new raytracer for modeling AU-scale imaging of lines from protoplanetary disks** by *Klaus M. Pontoppidan et al.*
astro-ph/0908.3468: **Precision Astrometry of a Sample of Speckle Binaries and Multiples with the Adaptive Optics Facilities at the Hale and Keck II Telescopes** by *K. G. Helminiak et al.*
astro-ph/0908.3775: **The Radial Velocity TATOOINE Search for Circumbinary Planets: Planet Detection Limits for a Sample of Double-lined Binary Stars - Initial Results from Keck I/Hires, Shane/CAT/Hamspec and TNG/Sarg Observations** by *Maciej Konacki*
astro-ph/0908.4056: **A statistical model for the relation between exoplanets and their host stars** by *E. Martinez-Gomez & G.J. Babu*