ExoPlanet News
An Electronic Newsletter

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Editors: Andrew J. Norton
Glenn J. White
Department of Physical Sciences, The Open University, Milton Keynes MK7 6AA, UK
exoplanet@open.ac.uk, http://exoplanet.open.ac.uk/

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1 Editorial

Welcome to the fiftieth edition of ExoPlanet News – we hope readers have enjoyed reaching this half-century as much as we have. When we started this newsletter back in August 2007, only around 300 exoplanets were confirmed – now the total is almost 800, with thousands of other candidate systems identified. The last five years have seen the discovery of super-Earth planets, planets in habitable zones, circumbinary planets, multi-planet systems, planets discovered by imaging, astrometry and transit timing variations for the first time, as well as numerous new results in transmission spectroscopy, the Rossiter-McLaughlin effect, secondary eclipses and phase variations, amongst others. We look forward eagerly to the next 50 editions!

So, we're pleased to present another selection of excellent abstracts this month covering a wide range of exoplanet science, along with assorted job adverts and other announcements.

The next edition of the newsletter is planned for the beginning of July 2012, so please send anything relevant to exoplanet@open.ac.uk, and it will appear then. 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.

Best wishes
Andrew Norton & Glenn White
The Open University

2 Abstracts of refereed papers

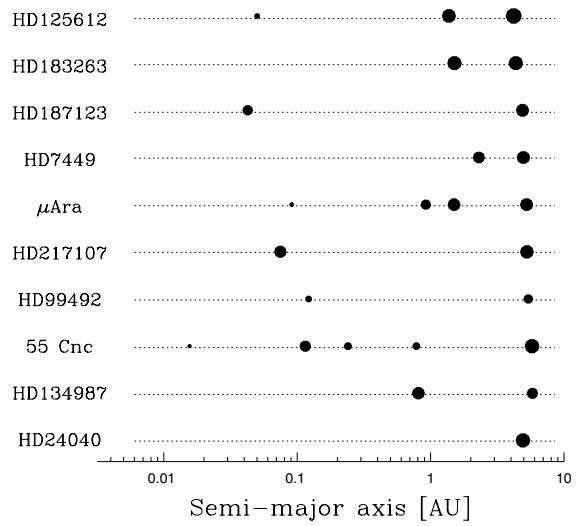

Figure 1: (Boisse et al.) Multiple systems with semi-major axis greater than 4 AU. The size of the dots shows the minimum mass of the planet in a log scale.

The SOPHIE search for northern extrasolar planets V. Follow-up of ELODIE candidates: Jupiter-analogues around Sun-like stars

I. Boisse[1,2], F. Pepe[3], C. Perrier[4], D. Queloz[3], X. Bonfils[4], F. Bouchy[2,5], N.C. Santos[1,6], L. Arnold[5], J.-L. Beuzit[4], R.F. Díaz[7], X. Delfosse[4], A. Eggenberger[4], D. Ehrenreich[4], T. Forveille[4], G. Hébrard[2,5], A.M. Lagrange[4], C. Lovis[3], M. Mayor[3], C. Moutou[7], D. Naef[3], A. Santerne[7], D. Ségransan[3], J.-P. Sivan[7], S. Udry[3].

[1] Centro de Astrofísica, Universidade do Porto, Rua das Estrelas, 4150-762 Porto, Portugal
[2] Institut d'Astrophysique de Paris, UMR7095 CNRS, Université Pierre & Marie Curie, 98bis Bd Arago, 75014 Paris, France
[3] Observatoire de Genève, Université de Genève, 51 Ch. des Maillettes, 1290 Sauverny, Switzerland
[4] Université Joseph Fourier–Grenoble1/CNRS, Laboratoire d'Astrophysique de Grenoble, Grenoble Cedex 9, France
[5] Observatoire de Haute Provence, CNRS/OAMP, 04870 St Michel l'Observatoire, France
[6] Departamento de Física e Astronomia, Faculdade de Ciências, Universidade do Porto, Porto, Portugal
[7] Laboratoire d'Astrophysique de Marseille, Université de Provence & CNRS, 38 rue Frédéric Joliot-Curie, Marseille, France

Astronomy & Astrophysics, in press (arXiv:1205.5835)

We present radial-velocity measurements obtained in one of the programs to search for extrasolar planets with the spectrograph SOPHIE at the 1.93-m telescope of the Haute-Provence Observatory. Targets were selected from catalogs observed with ELODIE, mounted previously at the telescope, in order to detect long-period planets with an extended database close to 15 years.

Two new Jupiter-analogue candidates are reported to orbit the bright stars HD150706 and HD222155 in 16.1 and 10.9 yr at $6.7^{+4.0}_{-1.4}$ and $5.1^{+0.6}_{-0.7}$ AU. They respectively have minimum masses of $2.71^{+1.44}_{-0.66}$ and $1.90^{+0.67}_{-0.53}$ M_{Jup}. Using the measurements from ELODIE and SOPHIE, we refine the parameters of the long-period planets HD154345b and HD89307b, and publish the first reliable orbit for HD24040b. This last companion has a minimum mass of 4.01 ± 0.49 M_{Jup} orbiting its star in 10.0 yr at 4.92 ± 0.38 AU. Moreover, the data present evidence for a third bound object in the HD24040 system.

With a surrounding dust debris disk, HD150706 is an active G0 dwarf for which we partially corrected the effect of the stellar spot on the SOPHIE radial-velocities. By contrast, HD222155 is an inactive G2V. In the SOPHIE measurements an instrumental effect could be characterized and partly corrected. Considering the work of Lovis et al. (2011b) and that we did not find significant correlation with the activity index in the SOPHIE data, the radial-velocity variations are not expected to come from stellar magnetic cycles. Finally, we discuss the main properties of this new population of long-period Jupiter-mass planets, for the moment, builds up of less than 20 candidates. These stars are preferential targets for direct-imaging or astrometry follow-up to constrain the system parameters and for higher precision radial-velocity to search for lower mass planets, aiming to find a Solar System twin. In the Appendix, we determine the relation that gives the radial-velocity offset between the ELODIE and SOPHIE spectrographs.

Contact: Isabelle.Boisse@astro.up.pt

Detection of Thermal Emission from a Super-Earth

Brice-Olivier Demory[1], *Michaël Gillon*[2], *Sara Seager*[1,3], *Bjoern Benneke*[1], *Drake Deming*[4] *and Brian Jackson*[5]

[1] Department of Earth, Atmospheric and Planetary Sciences, Massachusetts Institute of Technology, 77 Massachusetts Ave., Cambridge, MA 02139, USA. demory@mit.edu
[2] Institut d'Astrophysique et de Géophysique, Université de Liège, Allée du 6 Août, 17, Bat. B5C, Liège 1, Belgium.
[3] Department of Physics and Kavli Institute for Astrophysics and Space Research, MIT, 77 Massachusetts Avenue, Cambridge, MA 02138, USA.
[4] Department of Astronomy, University of Maryland, College Park, MD 20742-2421, USA
[5] Carnegie Institution of Washington, Department of Terrestrial Magnetism, 5241 Broad Branch Road NW, Washington, DC, 20015, USA.

Astrophysical Journal Letters, published (2012ApJ...751L..28D)

We report on the detection of infrared light from the super-Earth 55 Cnc e, based on four occultations obtained with *Warm Spitzer* at 4.5 μm. Our data analysis consists of a two-part process. In a first step, we perform individual analyses of each dataset and compare several baseline models to optimally account for the systematics affecting each lightcurve. We apply independent photometric correction techniques, including polynomial detrending and pixel-mapping, that yield consistent results at the 1-σ level. In a second step, we perform a global MCMC analysis including all four datasets, that yields an occultation depth of 131 ± 28 ppm, translating to a brightness temperature of $2360 \pm 300\,K$ in the IRAC-4.5 μm channel. This occultation depth suggests a low Bond albedo coupled to an inefficient heat transport from the planetary dayside to the nightside, or else possibly that the 4.5 μm observations probe atmospheric layers that are hotter than the maximum equilibrium temperature (i.e., a thermal inversion layer or a deep hot layer). The measured occultation phase and duration are consistent with a circular orbit and improves the 3-σ upper limit on 55 Cnc e's orbital eccentricity from 0.25 to 0.06.

Download/Website: `http://adsabs.harvard.edu/abs/2012ApJ...751L..28D`

Contact: `demory@mit.edu`

Photometric Variability of the Disk Integrated Infrared Emission Of the Earth

I. Gómez-Leal[1,2], *E. Pallé*[3], *F. Selsis*[1,2]

[1] Univ. Bordeaux, LAB, UMR 5804, F-33270, Floirac, France.
[2] CNRS, LAB, UMR 5804, F-33270, Floirac, France.
[3] Instituto de Astrofísica de Canarias, Vía Láctea s/n, La Laguna E-38205, Tenerife, Spain.

Astrophysical Journal, published (2012, ApJ, 752, 28 /arXiv:1205.5010v1)

Here, we present an analysis of the global-integrated mid-infrared emission flux of the Earth based on data derived from satellite measurements. We have studied the photometric annual, seasonal, and rotational variability of the thermal emission of the Earth to determine which properties can be inferred from the point-like signal. We find that the analysis of the time series allows us to determine the 24 hr rotational period of the planet for most observing geometries, due to large warm and cold areas, identified with geographic features, which appear consecutively in the observer's planetary view. However, the effects of global-scale meteorology can effectively mask the rotation for several days at a time. We also find that orbital time series exhibit a seasonal modulation, whose amplitude depends strongly on the latitude of the observer but weakly on its ecliptic longitude. As no systematic difference of brightness temperature is found between the dayside and nightside, the phase variations of the Earth in the infrared range are negligible. Finally, we also conclude that the phase variation of a spatially unresolved Earth–Moon system is dominated by the lunar signal.

Download/Website: `http://iopscience.iop.org/0004-637X/752/1/28/`

Contact: `gomezleal@obs.u-bordeaux1.fr`

Masses, Radii, and Cloud Properties of the HR 8799 Planets

M. Marley[1], *D. Saumon*[2], *M. Cushing*[3], *A. Ackerman*[4], *J. Fortney*[5], *R. Freedman*[1]

[1] NASA Ames Research Center, Moffett Field CA, USA
[2] Los Alamos National Laboratory, Los Alamos NM, USA
[3] The Univ. of Toledo, Toledo, OH, USA
[4] NASA Goddard Institute for Space Studies, New York NY, USA
[5] Univ. California at Santa Cruz, Santa Cruz, CA, USA

Astrophysical Journal, in press; arXiv:1205.6488v1

The near-infrared colors of the planets directly imaged around the A star HR 8799 are much redder than most field brown dwarfs of the same effective temperature. Previous theoretical studies of these objects have concluded that the atmospheres of planets b, c, and d are unusually cloudy or have unusual cloud properties. Most studies have also found that the inferred radii of some or all of the planets disagree with expectations of standard giant planet evolution models. Here we compare the available data to the predictions of our own set of atmospheric and evolution models that have been extensively tested against observations of field L and T dwarfs, including the reddest L dwarfs. Unlike almost all previous studies we require mutually consistent choices for effective temperature, gravity, cloud properties, and planetary radius. This procedure thus yields plausible values for the masses, effective temperatures, and cloud properties of all three planets. We find that the cloud properties of the HR 8799 planets are not unusual but rather follow previously recognized trends, including a gravity dependence on the temperature of the L to T spectral transition–some reasons for which we discuss. We find the inferred mass of planet b is highly sensitive to whether or not we include the H and K band spectrum in our analysis. Solutions for planets c and d are consistent with the generally accepted constraints on the age of the primary star and orbital dynamics. We also confirm that, like in L and T dwarfs and solar system giant planets, non-equilibrium chemistry driven by atmospheric mixing is also important for these objects. Given the preponderance of data suggesting that the L to T spectral type transition is gravity dependent, we present an exploratory evolution calculation that accounts for this effect. Finally we recompute the the bolometric luminosity of all three planets.

Contact: Mark.S.Marley@NASA.gov

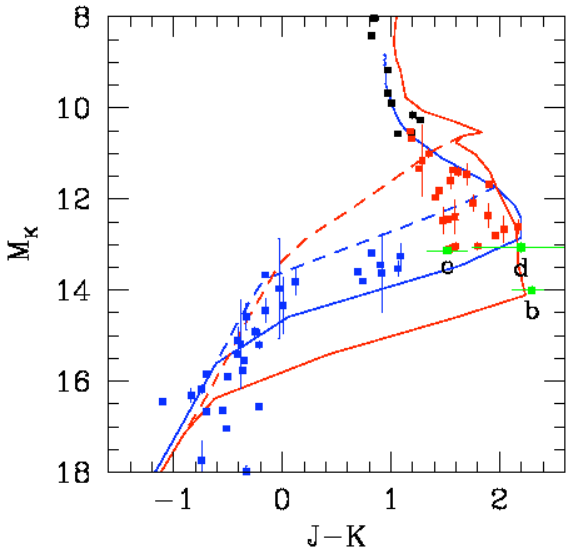

Figure 2: (Marley et al.) Examples of cooling tracks for objects of $5, \mathrm{M_J}$ (red) and $20\,\mathrm{M_J}$ (blue) in a M_K vs. $J - K$ color-magnitude diagram where the transition from cloudy ($f_{\rm sed}$ = 1) to cloudless atmospheres is taken into account explicitly as in Saumon & Marley (2008). Dashed lines show the evolution when the transition occurs over a fixed range of $T_{\rm eff}$ that is independent of gravity, solid lines show the evolution for the gravity-dependent transition. The planets in the HR 8799 system are shown with green symbols while resolved field objects are shown in black (M dwarfs), red (L dwarfs) and blue (T dwarfs). For the full caption and data sources see Figure 12.

Planetesimal Formation in Magnetorotationally Dead Zones: Critical Dependence on the Net Vertical Magnetic Flux

Satoshi Okuzumi[1] *& Shigenobu Hirose*[2]

[1] Department of Physics, Nagoya University, Nagoya, Aichi 464-8602, Japan
[2] Institute for Research on Earth Evolution, JAMSTEC, Yokohama, Kanagawa 236-0001, Japan

Astrophysical Journal Letters, in press (arXiv:1205.6754)

Turbulence driven by magnetorotational instability (MRI) affects planetesimal formation by inducing diffusion and collisional fragmentation of dust particles. We examine conditions preferred for planetesimal formation in MRI-inactive "dead zones" using an analytic dead-zone model based on our recent resistive MHD simulations. We argue that successful planetesimal formation requires not only a sufficiently large dead zone (which can be produced by tiny dust grains) but also a sufficiently small net vertical magnetic flux (NVF). Although often ignored, the latter condition is indeed important since the NVF strength determines the saturation level of turbulence in MRI-active layers. We show that direct collisional formation of icy planetesimal across the fragmentation barrier is possible when the NVF strength is lower than 10 mG (for the minimum-mass solar nebula model). Formation of rocky planetesimals via the secular gravitational instability is also possible within a similar range of the NVF strength. Our results indicate that the fate of planet formation largely depends on how the NVF is radially transported in the initial disk formation and subsequent disk accretion processes.

Download/Website: `http://arxiv.org/abs/1205.6754`

Contact: `okuzumi@nagoya-u.jp`

Baroclinic Instability on Hot Extrasolar Planets

I. Polichtchouk & J. Y-K. Cho

Astronomy Unit, School of Physics and Astronomy, Queen Mary University of London, London E1 4NS, UK

Monthly Notices of the Royal Astronomical Society, in press (arXiv:1205.4453)

We investigate baroclinic instability in flow conditions relevant to hot extrasolar planets. The instability is important for transporting and mixing heat, as well as for influencing large-scale variability on the planets. Both linear normal mode analysis and non-linear initial value calculations are carried out – focusing on the freely-evolving, adiabatic situation. Using a high-resolution general circulation model (GCM) which solves the traditional primitive equations, we show that large-scale jets similar to those observed in current GCM simulations of hot extrasolar giant planets are likely to be baroclinically unstable on a timescale of few to few tens of planetary rotations, generating cyclones and anticyclones that drive weather systems. The growth rate and scale of the most unstable mode obtained in the linear analysis are in qualitative, good agreement with the full non-linear calculations. In general, unstable jets evolve differently depending on their signs (eastward or westward), due to the change in sign of the jet curvature. For jets located at or near the equator, instability is strong at the flanks – but not at the core. Crucially, the instability is either poorly or not at all captured in simulations with low resolution and/or high artificial viscosity. Hence, the instability has not been observed or emphasized in past circulation studies of hot extrasolar planets.

Download/Website: `http://arxiv.org/abs/1205.4453`

Contact: `I.Polichtchouk@qmul.ac.uk`

The Detection and Characterization of a Non-Transiting Planet by Transit Timing Variations

D. Nesvorný[1], D. M. Kipping[2,3], L. A. Buchhave[4,5], G. Á. Bakos[6], J. Hartman[6], A. R. Schmitt[7]

[1] Department of Space Studies, Southwest Research Institute, Boulder, CO 80302, USA
[2] Harvard-Smithsonian Center for Astrophysics, Cambridge, MA 02138, USA
[3] NASA Carl Sagan Fellow
[4] Niels Bohr Institute, University of Copenhagen, DK-2100, Copen hagen, Denmark
[5] Natural History Museum of Denmark, Univ. of Copenhagen, DK-1350, Copenhagen, Denmark
[6] Department of Astrophysical Sciences, Princeton University, Princeton, NJ 05844, USA
[7] Citizen Science

Science, Published online 10 May 2012 (DOI:10.1126/science.1221141)

The Kepler Mission is monitoring the brightness of ∼150,000 stars searching for evidence of planetary transits. As part of the "Hunt for Exomoons with Kepler" (HEK) project, we report a planetary system with two confirmed planets and one candidate planet discovered using the publicly available data for KOI-872. Planet b transits the host star every $P_{\rm b} = 33.6$ d and exhibits large transit timing variations indicative of a perturber. Dynamical modeling uniquely detects an outer nontransiting planet c near the 5:3 resonance ($P_{\rm c} = 57.0$ d) of mass $M_{\rm c} = 0.37\ M_{\rm J}$. Transits of a third planetary candidate are also found; a $1.7 R_{\rm E}$ Super-Earth with a 6.8 d period. Our analysis indicates a system with nearly coplanar and circular orbits, reminiscent of the orderly arrangement within the Solar System.

Searching for young Jupiter Analogs around AP Col: L-band High-contrast Imaging of the Closest Pre-main-sequence Star

Sascha P. Quanz[1], Justin R. Crepp[2], Markus Janson[3], Henning Avenhaus[1], Michael R. Meyer[1], and Lynne A. Hillenbrand[3]

[1] Institute for Astronomy, ETH Zurich, Wolfgang-Pauli-Strasse 27, 8093 Zurich, Switzerland
[2] Department of Astrophysics, California Institute of Technology, 1200 E. California Blvd., Pasadena, CA 91125, USA
[3] Department of Astrophysical Sciences, Princeton University, Princeton, NJ, USA

ApJ, in press (http://xxx.lanl.gov/abs/1205.6890)

The nearby M-dwarf AP Col was recently identified by Riedel et al. 2011 as a pre-main-sequence star (age 12 – 50 Myr) situated only 8.4 pc from the Sun. The combination of its youth, distance, and intrinsically low luminosity make it an ideal target to search for extrasolar planets using direct imaging. We report deep adaptive optics observations of AP Col taken with VLT/NACO and Keck/NIRC2 in the L-band. Using aggressive speckle suppression and background subtraction techniques, we are able to rule out companions with mass $m \geq 0.5$ – $1 \mathrm{M_{Jup}}$ for projected separations $a > 4.5$ AU, and $m \geq 2\,\mathrm{M_{Jup}}$ for projected separations as small as 3 AU, assuming an age of 40 Myr using the COND theoretical evolutionary models. Using a different set of models the mass limits increase by a factor of ≥2. The observations presented here are the deepest mass-sensitivity limits yet achieved within 20 AU on a star with direct imaging. While Doppler radial velocity surveys have shown that Jovian bodies with close-in orbits are rare around M-dwarfs, gravitational microlensing studies predict that 17^{+6}_{-9}% of these stars host massive planets with orbital separations of 1-10 AU. Sensitive high-contrast imaging observations, like those presented here, will help to validate results from complementary detection techniques by determining the frequency of gas giant planets on wide orbits around M-dwarfs.

Download/Website: `http://xxx.lanl.gov/abs/1205.6890`

Contact: `quanz@astro.phys.ethz.ch`

The Frequency of Hot Jupiters Orbiting Nearby Solar-Type Stars

J. T. Wright[1,2], G. W. Marcy[3], A. W. Howard[3], John Asher Johnson[4,5], T. D. Morton[4], D. A. Fischer[6]

[1] Department of Astronomy, 525 Davey Lab, The Pennsylvania State University, University Park, PA, 16802
[2] Center for Exoplanets and Habitable Worlds, The Pennsylvania State University, University Park, PA 16802
[3] Department of Astronomy, University of California, Berkeley, CA, 94720
[4] Department of Astronomy, California Institute of Technology, MC 249-17, Pasadena, CA 91106
[5] NASA Exoplanet Science Institute (NExScI), California Institute of Technology, MC 100-22, 770 South Wilson Avenue, Pasadena, CA 91125
[6] 260 Whitney Avenue, Yale University, New Haven, CT 06511

Astrophysical Journal, accepted (arXiv:1205.2273v1)

We determine the fraction of F, G, and K dwarfs in the Solar Neighborhood hosting hot jupiters as measured by the California Planet Survey from the Lick and Keck planet searches. We find the rate to be $1.2 \pm 0.38\%$, which is consistent with the rate reported by Mayor et al. (2011) from the HARPS and CORALIE radial velocity surveys. These numbers are more than double the rate reported by Howard et al. (2011) for *Kepler* stars and the rate of Gould et al. (2006) from the OGLE-III transit search, however due to small number statistics these differences are of only marginal statistical significance. We explore some of the difficulties in estimating this rate from the existing radial velocity data sets and comparing radial velocity rates to rates from other techniques.

Download/Website: `http://arxiv.org/abs/1205.2273`

Contact: `jtwright@astro.psu.edu`

The stellar wind cycles and planetary radio emission of the τ Boo system

A. A. Vidotto[1], R. Fares[1], M. Jardine[1], J.-F. Donati[2], M. Opher[3], C. Moutou[4], C. Catala[5] and T. I. Gombosi[6]

[1] SUPA, School of Physics and Astronomy, University of St Andrews, North Haugh, St Andrews, KY16 9SS, UK
[2] LATT-UMR 5572, CNRS & Univ. P. Sabatier, 14 Av. E. Belin, Toulouse, F-31400, France
[3] Department of Astronomy, Boston University, 725 Commonwealth Avenue, Boston, MA, 02215, USA
[4] LAM-UMR 6110, CNRS & Univ. de Provence, 38 rue Fréderic Juliot-Curie, Marseille, F-13013, France
[5] LESIA-UMR 8109, CNRS & Univ. Paris VII, 5 Place Janssen, Meudon-Cedex, F-92195, France
[6] University of Michigan, 1517 Space Research Building, Ann Arbor, MI, 48109, USA

Monthly Notices of the Royal Astronomical Society, in press (2012arXiv1204.3843V)

τ Boo is an intriguing planet-host star that is believed to undergo magnetic cycles similar to the Sun, but with a duration that is about one order of magnitude smaller than that of the solar cycle. With the use of observationally derived surface magnetic field maps, we simulate the magnetic stellar wind of τ Boo by means of three-dimensional MHD numerical simulations. As the properties of the stellar wind depend on the particular characteristics of the stellar magnetic field, we show that the wind varies during the observed epochs of the cycle. Although the mass loss-rates we find ($\sim 2.7 \times 10^{-12}$ $\mathrm{M_\odot\ yr^{-1}}$) vary less than 3 per cent during the observed epochs of the cycle, our derived angular momentum loss-rates vary from 1.1 to 2.2×10^{32} erg. The spin-down times associated to magnetic braking range between 39 and 78 Gyr. We also compute the emission measure from the (quiescent) closed corona and show that it remains approximately constant through these epochs at a value of $\sim 10^{50.6}$ $\mathrm{cm^{-3}}$. This suggests that a magnetic cycle of τ Boo may not be detected by X-ray observations. We further investigate the interaction between the stellar wind and the planet by estimating radio emission from the hot-Jupiter that orbits at 0.0462 au from τ Boo. By adopting reasonable hypotheses, we show that, for a planet with a magnetic field similar to Jupiter (~ 14 G at the pole), the radio flux is estimated to be about $0.5 - 1$ mJy, occurring at a frequency of 34 MHz. If the planet is less magnetised (field strengths roughly smaller than 4 G), detection of radio emission from the ground is unfeasible due to the Earth's ionospheric cutoff. According to our estimates, if the planet is more magnetised than that and provided the emission beam crosses the observer line-of-sight, detection of radio emission from τ Boo b is only possible by ground-based instruments with a noise level of < 1 mJy, operating at low frequencies.

Download/Website: `http://arxiv.org/abs/1204.3843`
`http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2966.2012.21122.x/pdf`

Contact: `Aline.Vidotto@st-andrews.ac.uk`

3 Jobs and Positions

Maître d'Enseignement et de Recherche (Senior Lecturer)

S. Udry
Astronomy Department, Geneva University, Switzerland

Astronomy Department of the Geneva University (Geneva Observatory), Fall 2012

The Astronomy Department of the Geneva University invites applications for a tenured position as *Maître d'Enseignement et de Recherche* (MER, corresponding to Senior Lecturer) to work in the Exoplanet team with Professors Stéphane Udry, Didier Queloz and Francesco Pepe, on theoretical and observational aspects of exoplanet detection and characterization.
The successful candidate should have an outstanding research record in the field. A focus on the characterization of exoplanet atmospheres through high-resolution spectroscopy or direct imaging, or on the dynamical modeling of multi-planet systems and their characterization through the combination of observational and theoretical constraints, would be of particular interest. She/he is expected to contribute to the various research activities of the Geneva exoplanet group, to participate actively in the teaching of astrophysics courses at both the undergraduate and graduate levels, and to attract external funding. Expected starting date: September 1st 2012 (or upon agreement).

The University of Geneva particularly encourages women to apply for this position.

Applications (in English) including a curriculum vitae, a list of publications, and an outline of current and planned future research should be uploaded to the Geneva University dedicated web site at `https://jobs.icams.unige.ch/`. Deadline is June 11th 2012.

Download/Website: `http://www.unige.ch/sciences/astro/fr/Emploi/index.html`
Contact: `stephane.udry@unige.ch`

Postdoctoral position offer to work with the CoRoT team

Marc Ollivier
Institut d'Astrophysique Spatiale, Bâtiment 121, Université de Paris-Sud, 91405 ORSAY Cedex, FRANCE

Institut d'Astrophysique Spatiale, June 1st, 2012

A postdoctoral position for 2 years (1 year + 1 year extension), beginning in 2012 is open for applications at Institut dAstrophysique Spatiale (IAS) to work with the team involved in the scientific exploitation of the CoRoT space telescope. IAS is located on the campus of University Paris-Sud in Orsay (45 minutes from the centre of Paris by public transportation). It gathers more than 150 people working in different fields of astrophysics from space (see http://www.ias.u-psud.fr). IAS has strong collaborations with the other astrophysics laboratories in the Paris area.
The CoRoT mission (http://smsc.cnes.fr/COROT/index.htm), launched at the end of 2006, has been providing high quality stellar light curves since January 2007, allowing both the study of stellar interiors thanks to asteroseismology and planet hunting thanks to transit photometry. The mission is funded until the end of March 2013 and a proposal for an extension until 2016 has been submitted to CNES. CoRoT is a pioneer mission that allowed, combined with a specific follow-up program, several "premieres" such as the first combined measurements of the masses and radii of a brown dwarf (CoRoT- 3b) and a terrestrial planet (CoRoT-7b). CoRoT also unveiled new fields for asteroseismology such as internal sounding of red giants and provided the first detailed studies of solar-like oscillators on the main sequence. After more than 5 years of observation, about 25 exoplanetary systems have been discovered and characterized, and a large sample of stars across the Hertzsprung-Russell diagram have been seismically studied. The CoRoT database, now rich of more than 150,000 light curves, offers a great potential for new astrophysical studies.
The proposed position is aimed at making progress in the domains of investigation of CoRoT (exoplanets search, stellar physics) but a special attention will be given to research programs on the understanding of stellar systems as a whole using CoRoT data. The research program could therefore address planetary science or stellar physics topics, but also links between these two fields, such as, for example, the formation and evolution of these systems or the interactions between host stars and their planets, stellar activity and planetary detectivity, stellar driving on planets atmosphere
The applicant is expected to be either knowledgeable in exoplanetology or stellar physics, with ideally both skills. Applications from data analysis experts focused on the data themselves or theoreticians focusing on data interpretation will also be considered.
Information requests and applications (including a CV, the name of two or three reference persons, and a short description of a research program) should be sent to Marc Ollivier (marc.ollivier@ias.u-psud.fr) and Frdric Baudin (frederic.baudin@ias.u- psud.fr) before June 1st, 2012.

Download/Website: `http://smsc.cnes.fr/COROT/index.htm`

Contact: `marc.ollivier@ias.u-psud.fr, frederic.baudin@ias.u-psud.fr`

Two PhD positions

Prof A. Reiners, Dr S. Jeffers
Institute for Astrophysics at the Georg-August University, Friedrich-Hund-Platz 1 37077 Göttingen, Germany

IAG, as soon as possible

Applications are invited for Two PhD positions in the search for extrasolar planets and stellar activity. Regular working hours will be 29.85 hours per week (75% TV-L 13). The positions will be limited to two years with an extension of one year and will be filled as soon as possible. We search for highly motivated candidates that have a master or diploma degree with astronomical background and a strong interest in the search for extrasolar planets and stellar activity. The graduate students will work primarily under the supervision of Prof. Ansgar Reiners and Dr. Sandra Jeffers and will be actively involved in the collaborative programme 'Astrophysical Flow Instabilities and Turbulence', funded by the German DFG. The PhD students will also benefit from a collaborative training programme with Hamburg Observatory on Extrasolar Planets and their Host Stars and the close-by Max-Planck Institute for Solar System Research in Katlenburg-Lindau.

The rapidly expanding 'Stellar Activity and Extra-solar Planets' research group at the Institute for Astrophysics at the Georg-August University, Göttingen, offers a young and dynamic work environment. Research at the IAG combines theoretical and observational work in stellar astrophysics, extra-solar planets, astro and helioseismology, solar physics, instrument development as well as other fields. It is participating in the development of ESO VLT and E-ELT facilities and of the exoplanet survey CARMENES at Calar Alto Observatory. Göttingen is a historic university city with a vibrant student population situated close to the Harz mountains in central Germany.

The University of Göttingen is an equal opportunities employer and places particular emphasis on fostering career opportunities for women. Qualified women are therefore strongly encouraged to apply. Disabled persons with equivalent aptitude will be favoured.

Please send your application with the usual documents in electronic form by 31.07.2012 to e-mail: crc963@astro.physik.uni-goettingen.de, and contact Prof. Ansgar Reiners and Dr. Sandra Jeffers for questions.

We request that you do not send us originals of your application documents, as no returns will be made. We will destroy the documents after a holding period of five months.

Download/Website: `http://www.astro.physik.uni-goettingen.de/~areiners/`

Contact: `crc963@astro.physik.uni-goettingen.de`

Research Assistant in Instrumentation Development

Prof A. Reiners
Institute for Astrophysics at the Georg-August University, Friedrich-Hund-Platz 1 37077 Göttingen, Germany

IAG, as soon as possible

In the framework of a Starting Grant from the European Research Council, applications are invited for the position of a Research Assistant in Instrumentation Development for the spectroscopic search for extrasolar planets. We are searching for an experimental physicist with experience in high precision spectroscopy and laser technology. Background in extrasolar planet research is advantageous. Candidates should have a PhD in physics. Regular working hours will be 39.8 hours per week with a limited contract of 2 years with possible extension to 4 years (Pay grade 13 TV-L).

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Please send your application with the usual documents in electronic form by 31.07.2012 to e-mail: sekr@astro.physik.uni-goettingen.de , and contact Prof. Ansgar Reiners for questions.

Download/Website: `http://www.astro.physik.uni-goettingen.de/~areiners/`

Contact: `sekr@astro.physik.uni-goettingen.de`

Lecturer/Team Leader in Astrophysics

Professor Stephen Smartt
Astrophysics Research Centre, School of Mathematics and Physics, QUB, Belfast, BT7 1NN, UK

Queen's University Belfast, United Kingdom, Start date: 1 September 2012 or soon thereafter

The School of Mathematics and Physics of Queen's University Belfast seeks to make three permanent appointments at lecturer level (assistant professor) in Astrophysics by September 1st 2012 or as soon as possible thereafter. These are tenured faculty positions at the assistant professor level. We are searching for high calibre candidates with outstanding research records who are potential team leaders. Successful candidates will be provided with resources to build and lead a research team. This includes significant personal start-up funding, guaranteed PhD studentships and access to future facilities through either committed or future University investment. If candidates hold a personal fellowship which can be transferred to Queen's, then further postdoctoral support funding is negotiable.

Successful candidates will be expected to contribute to the research and teaching and activities of the School and to sustain their research team through external funding.

The research interests of the successful candidates must complement and strengthen existing research within the Astrophysics Research Centre. Main areas of scientific interest are in supernovae and transients, extrasolar planets, solar physics and solar system physics. We anticipate strengthening these areas with the three appointments. Candidates working in either theoretical or observational aspects of these areas are encouraged to apply. We particularly encourage applications from theorists who would extend and enhance our current research activities.

Informal enquiries may be directed to the Chair of the search committee Professor Stephen Smartt:

To apply, go to the portal below and carefully review the "Job Details". The application should include a CV (3 page maximum), plus a list of publications (no page limit) and a 2 page research plan setting out their vision for their research over the next five years.

e-mail s.smartt@qub.ac.uk, telephone +44 (0)28 9097 1245.

The start-up package includes 24k personal funding, 2 PhD studentships, access to ARC's substantial facility investment portfolio, and postdoc funding if the candidate transfers a personal fellowship.

Salary: £32,901 – £39,257per annum (including contribution points).

Download/Website: `http://www.qub.ac.uk/sites/QUBJobVacancies/AcademicOpportunities/`

Contact: `s.smartt@qub.ac.uk`

4 Announcements

Fizeau exchange visitors program in optical interferometry - call for applications

Josef Hron & Laszlo Mosoni
European Interferometry Initiative

www.european-interferometry.eu, application deadline: Sept. 15

The Fizeau exchange visitors program in optical interferometry funds (travel and accommodation) visits of researchers to an institute of his/her choice (within the European Community) to perform collaborative work and training on one of the active topics of the European Interferometry Initiative. The visits will typically last for one month, and strengthen the network of astronomers engaged in technical, scientific and training work on optical/infrared interferometry. The program is open for all levels of astronomers (Ph.D. students to tenured staff). Applicants are strongly encouraged to seek also partial support from their home or host institutions.

The deadline for applications is June 15 for visits between July 15 and December 31.

Note that an early next call may be issued in June for visits starting in July.

Further informations and application forms can be found at: www.european-interferometry.eu
The program is funded by OPTICON/FP7.

Looking forward to your applications,
Josef Hron & Laszlo Mosoni
(for the European Interferometry Initiative)

Download/Website: `http://www.european-interferometry.eu`

Contact: `fizeau@european-interferometry.eu`

Keck Observatory Archive Releases NIRC2 Data

B. Berriman
NASA Exoplanet Science Institute, California Institute of Technology, Pasadena, CA, USA

California Institute of Technology, available now

The Keck Observatory Archive (KOA) has released raw and calibrated images from the Near Infrared Camera 2 (NIRC2). This is the first imaging instrument archived in KOA, and the third instrument altogether. As of May 7, 1240 nights of NIRC2 data have been archived, and 932 nights are public. These data include all four observing modes: narrow-imaging, medium-imaging, wide-imaging, and spectroscopy. New data will be added whenever NIRC2 is scheduled on the telescope. The NIRC2 data may be accessed through the KOA search page.

Download/Website: `https://koa.ipac.caltech.edu/cgi-bin/KOA/nph-KOAlogin`

Contact: `nexsci@ipac.caltech.edu`

New Release of the NASA Exoplanet Archive

Rachel Akeson on behalf of the NASA Exoplanet Archive team
NASA Exoplanet Science Institute/Caltech

NASA Exoplanet Science Institute, updated

The NASA Exoplanet Science Institute (NExScI) announces a major update to the NASA Exoplanet Archive (http://exoplanetarchive.ipac.caltech.edu). Below is a summary of the new features and data in this release:

- A new table with Combined data: Data for both confirmed planets and Kepler candidates are now in a single table interface.
- Plotting of table columns: You can now plot columns from the interactive tables (Confirmed Planets, Kepler Candidates and Combined).
- More options on table downloads: Downloading planet table data now includes more output formats and control over which data (with or without table filtering and selected columns) are included.
- Kepler light curve plotting: Multi-quarter light curve plotting for Kepler now includes separate column selection for each quarters and additional plot controls.
- Viewable transits: A new service that finds viewable transits for a given 24-hour period at a location specified by the user. To access, click the Viewable Transits Service link on the left side of the home page.
- Sortable tables in display of next transits of confirmed planets and Kepler candidates.
- Additional massive planets: The Confirmed Planets table is now complete with published planets up to 30 M(Jupiter).

Sign-up for NASA Exoplanet Archive updates at https://lists.ipac.caltech.edu/mailman/listinfo/exoplanet-announce

Download/Website: `http://exoplanetarchive.ipac.caltech.edu/`

Contact: `http://exoplanetarchive.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 May 2012. If you see any that we missed, please let us know and we'll include them in the next issue.

astro-ph/1205.0010: **How Thermal Evolution and Mass Loss Sculpt Populations of Super-Earths and Sub-Neptunes: Application to the Kepler-11 System and Beyond** by *Eric D. Lopez, Jonathan J. Fortney, Neil K. Miller*

astro-ph/1205.0167: **The chemical diversity of exo-terrestrial planetary debris around white dwarfs** by *B.T. Gaensicke, D. Koester, J. Farihi et al*

astro-ph/1205.0259: **The SDSS-HET Survey of Kepler Eclipsing Binaries: Spectroscopic Dynamical Masses of the Kepler-16 Circumbinary Planet Hosts** by *Chad F. Bender, Suvrath Mahadevan, Rohit Deshpande et al*

astro-ph/1205.0301: **N-body Simulations of Satellite Formation around Giant Planets: Origin of Orbital Configuration of the Galilean Moons** by *Masahiro Ogihara, Shigeru Ida*

astro-ph/1205.0806: **Precision Astrometry of the Exoplanet Host Candidate GD 66** by *J. Farihi, J. P. Subasavage, E. P. Nelan et al*

astro-ph/1205.0822: **A dynamical analysis of the Kepler-11 planetary system** by *Cezary Migaszewski, Mariusz Slonina, Krzysztof Gozdziewski*

astro-ph/1205.0969: **A consistent analysis of three years of ground- and space-based photometry of TrES-2** by *S. Schroter, J. H. M. M. Schmitt, H. M. Muller*

astro-ph/1205.1058: **A False Positive For Ocean Glint on Exoplanets: the Latitude-Albedo Effect** by *Nicolas B. Cowan, Dorian S. Abbot, Aiko Voigt*

astro-ph/1205.1059: **Chaotic exchange of solid material between planetary systems: implications for lithopanspermia** by *Edward Belbruno, Amaya Moro-Martin, Renu Malhotra et al*

astro-ph/1205.1341: **Testing a hypothesis of the ?Octantis planetary system** by *Mariusz Slonina, Krzysztof Gozdziewski, Cezary Migaszewski et al*

astro-ph/1205.1388: **Design and Construction of Absorption Cells for Precision Radial Velocities in the K Band using Methane Isotopologues** by *Guillem Anglada-Escude, Peter Plavchan, Sean Mills et al*

astro-ph/1205.1468: **Anelastic tidal dissipation in multi-layer planets** by *F. Remus, S. Mathis, J.-P. Zahn et al*

astro-ph/1205.1766: **Detection of Thermal Emission from a Super-Earth** by *Brice-Olivier Demory, Michael Gillon, Sara Seager et al*

astro-ph/1205.1803: **Constraining Tidal Dissipation in Stars from The Destruction Rates of Exoplanets** by *Kaloyan Penev, Brian Jackson, Federico Spada et al*

astro-ph/1205.1940: **Wideband Infrared Spectrometer for Characterization of Transiting Exoplanets with Space Telescopes** by *Keigo Enya*

astro-ph/1205.1963: **Improved Variable Star Search in Large Photometric Data Sets – New Variables in CoRoT Field LRa02 Detected by BEST II** by *T. Fruth, P. Kabath, J. Cabrera et al*

astro-ph/1205.2084: **Planets Around Low-Mass Stars (PALMS). I. A Substellar Companion to the Young M Dwarf 1RXS J235133.3+312720** by *Brendan P. Bowler, Michael C. Liu, Evgenya L. Shkolnik et al*

astro-ph/1205.2273: **The Frequency of Hot Jupiters Orbiting Nearby Solar-Type Stars** by *J. T. Wright, G. W. Marcy, A. W. Howard et al*

astro-ph/1205.2279: **Interactions between brown-dwarf binaries and Sun-like stars** by *M. Kaplan, D. Stamatellos, A. P. Whitworth et al*

astro-ph/1205.2309: **Kepler constraints on planets near hot Jupiters** by *Jason H. Steffen, Darin Ragozzine, Daniel C. Fabrycky et al*

astro-ph/1205.2429: **The Habitable Zone and Extreme Planetary Orbits** by *Stephen R. Kane, Dawn M. Gelino*

astro-ph/1205.2431: **Predicting the Configuration of Planetary System: KOI-152 Observed by Kepler** by *Su Wang, Jianghui Ji, Ji-lin Zhou et al*

astro-ph/1205.2461: **Astronomical Evidence for the Rapid Growth of Millimeter Sized Particles in Protoplanetary Disks** by *Jonathan P. Williams*

astro-ph/1205.2757: **WASP-42 b and WASP-49 b: two new transiting Saturns** by *M. Lendl, D. R. Anderson, A. Collier-Cameron et al*

astro-ph/1205.2765: **The Anglo-Australian Planet Search. XXII. Two New Multi-Planet Systems** by *Robert A. Wittenmyer, J. Horner, M. Tuomi et al*

astro-ph/1205.3030: **Rapid growth of gas-giant cores by pebble accretion** by *Michiel Lambrechts, Anders Johansen*

astro-ph/1205.3233: **Measurements of Stellar Inclinations for Kepler Planet Candidates** by *Teruyuki Hirano, Roberto Sanchis-Ojeda, Yoichi Takeda et al*

astro-ph/1205.3332: **Astrometric confirmation of young low-mass binaries and multiple systems in the Chamaeleon star-forming regions** by *N. Vogt, T. O. B. Schmidt, R. Neuhauser et al*

astro-ph/1205.3503: **Detection of Weak Circumstellar Gas around the DAZ White Dwarf WD 1124-293: Evidence for the Accretion of Multiple Asteroids** by *J. H. Debes, M. Kilic, F. Faedi et al*

astro-ph/1205.3536: **The equilibrium tide in stars and giant planets: I - the coplanar case** by *F. Remus, S. Mathis, J.-P. Zahnl*

astro-ph/1205.3545: **870 micron Imaging of a Transitional Disk in Upper Scorpius: Holdover from the Era of Giant Planet Formation?** by *Geoffrey S. Mathews, Jonathan P. Williams, Francois Menard*

astro-ph/1205.3689: **A Second Giant Planet in 3:2 Mean-Motion Resonance in the HD 204313 System** by *Paul Robertson, J. Horner, Robert A. Wittenmyer et al*

astro-ph/1205.3723: **The frequency of giant planets around metal-poor stars** by *A. Mortier, N. C. Santos, A. Sozzetti et al*

astro-ph/1205.3840: **Detection of the 128 day radial velocity variations in the supergiant ? Persei. Rotational modulations, pulsations, or a planet?** by *Byeong-Cheol Lee, Inwoo Han, Myeong-Gu Park et al*

astro-ph/1205.4164: **On the HU Aquarii planetary system hypothesis** by *Krzysztof Gozdziewski, Ilham Nasiroglu, Aga Slowikowska et al*

astro-ph/1205.4453: **Baroclinic Instability on Hot Extrasolar Planets** by *Inna Polichtchouk, James Y-K. Chol*

astro-ph/1205.4725: **Detection of transiting Jovian exoplanets by Gaia photometry - expected yield** by *Yifat Dzigan, Shay Zuckerl*

astro-ph/1205.4736: **Probing the extreme planetary atmosphere of WASP-12b** by *Mark Swain, Pieter Deroo, Giovanna Tinetti et al*

astro-ph/1205.5010: **Photometric Variability of the Disk Integrated Infrared Emission of the Earth** by *I. Gomez-Leal, E. Palle, F. Selsis*

astro-ph/1205.5034: **Thermal Phases of Directly Imaged Exoplanets: the Effects of Eccentricity, Obliquity, and Diurnal Forcing** by *Nicolas B. Cowan, Aiko Voigt, Dorian S. Abbot*

astro-ph/1205.5042: **Dust Filtration by Planet-Induced Gap Edges: Implications for Transitional Disks** by *Zhaohuan Zhu, Richard P. Nelson, Ruobing Dong et al*

astro-ph/1205.5060: **Comprehensive time series analysis of the transiting extrasolar planet WASP-33b** by *G. Kovacs, T. Kovacs, J.D. Hartman et al*

astro-ph/1205.5507: **Correlated and zonal errors of global astrometric missions: a spherical harmonic solution** by *V. V. Makarov, B. N. Dorland, R. A. Gaume et al*

astro-ph/1205.5535: **Adaptive Optics Images of Kepler Objects of Interest** by *Elisabeth R. Adams, David R. Ciardi, Andrea K. Dupree et al*

astro-ph/1205.5704: **Dynamics of Rotation of Super-Earths** by *Nelson Callegari Jr, Adrian Rodriguez*

astro-ph/1205.5722: **A search for pre-substellar cores and proto-brown dwarf candidates in Taurus: multi-wavelength analysis in the B213-L1495 clouds** by *Aina Palau, I. de Gregorio-Monsalvo, O. Morata et al*

astro-ph/1205.5801: **Cheap Space-Based Microlens Parallaxes for High-Magnification Events** by *Andrew Gould, Jennifer C. Yee*

astro-ph/1205.5812: **Distinguishing Between Stellar and Planetary Companions With Phase Monitoring** by *Stephen R. Kane, Dawn M. Gelino*

astro-ph/1205.5835: **The SOPHIE search for northern extrasolar planets. V. Follow-up of ELODIE candidates: Jupiter-analogues around Sun-like stars** by *I. Boisse, F. Pepe, C. Perrier et al*

astro-ph/1205.5889: **The Mass of the Planet-hosting Giant Star Beta Geminorum Determined from its p-mode Oscillation Spectrum** by *A.P. Hatzes, M. Zechmeister, J. Matthews et al*

astro-ph/1205.6013: **Type I migration in optically thick accretion discs** by *K. Yamada, S. Inaba*

astro-ph/1205.6323: **MOA-2010-BLG-477Lb: constraining the mass of a microlensing planet from microlensing parallax, orbital motion and detection of blended light** by *E. Bachelet, I.-G. Shin, C. Han et al*

astro-ph/1205.6424: **Precise Modeling of the Exoplanet Host Star and CoRoT Main Target HD 52265** by *M. E. Escobar, S. Theado S. Vauclair, J. et al*

astro-ph/1205.6488: **Masses, Radii, and Cloud Properties of the HR 8799 Planets** by *Mark S. Marley, Didier Saumon, Michael Cushing et al*

astro-ph/1205.6492: **16 New Transiting Planet Candidates from Kepler Q1-Q6 Data** by *Xu Huang, Gaspar A. Bakos, Joel D. Hartman*

astro-ph/1205.6514: **Temperature-dependent molecular absorption cross sections for exoplanets and other atmospheres** by *Christian Hill, Sergei N. Yurchenko, Jonathan Tennyson*

astro-ph/1205.6554: **The silicate model and carbon rich model of CoRoT-7b, Kepler-9d and Kepler-10b** by *Yan-Xiang Gong, Ji-Lin Zhou*

astro-ph/1205.6670: **Overabundance of alpha-elements in exoplanet host stars** by *V.Zh. Adibekyan, N.C. Santos, S.G. Sousa et al*

astro-ph/1205.6769: **Planet Hunters: Assessing the Kepler Inventory of Short Period Planets** by *Megan E. Schwamb, Chris J. Lintott, Debra A. Fischer et al*

astro-ph/1205.6890: **Searching for young Jupiter analogs around AP Col: L-band high-contrast imaging of the closest pre-main sequence star** by *Sascha P. Quanz, Justin R. Crepp, Markus Janson et al*

astro-ph/1205.6939: **PTPS Candidate Exoplanet Host Star Radii Determination with CHARA Array** by *Pawel Zielinski, Martin Vanko, Ellyn Baines et al*