COOLNEWS

A RESEARCH NEWSLETTER DEDICATED TO COOL STARS AND THE SUN

No. 183 — Jan. - Feb. 2013 Editor: Steve Skinner (coolnews@jila.colorado.edu)

TABLE OF CONTENTS

Coolnews on the Web

The current and previous issues of *Coolnews* are available on the following web page in pdf, postscript, and Latex format: **http://casa.colorado.edu/∼skinners/coolnews.html**

Stellar Abstracts

Abundance Study of the Two Solar-Analogue *CoRoT* targets HD 42618 and HD 43587 from HARPS spectroscopy

T. Morel[1], M. Rainer[2], E. Poretti[2], C. Barban[3] and P. Boumier[4]

[1] Institut d'Astrophysique et de Géophysique, Université de Liège, Allée du 6 Août, Bât. B5c, 4000 Liège, Belgium
[2] INAF – Osservatorio Astronomico di Brera, via E. Bianchi 46, 23807 Merate (LC), Italy
[3] LESIA, CNRS, Université Pierre et Marie Curie, Université Denis Diderot, Observatoire de Paris, 92195 Meudon Cedex, France
[4] Institut d'Astrophysique Spatiale, UMR8617, Université Paris XI, Bâtiment 121, 91405 Orsay Cedex, France

We present a detailed abundance study based on spectroscopic data obtained with HARPS of two solar-analogue main targets for the asteroseismology programme of the *CoRoT* satellite: HD 42618 and HD 43587. The atmospheric parameters and chemical composition are accurately determined through a fully differential analysis with respect to the Sun observed with the same instrumental set-up. Several sources of systematic errors largely cancel out with this approach, which allows us to narrow down the 1-σ error bars to typically 20 K in effective temperature, 0.04 dex in surface gravity, and less than 0.05 dex in the elemental abundances. Although HD 42618 fulfils many requirements for being classified as a solar twin, its slight deficiency in metals and its possibly younger age indicate that, strictly speaking, it does not belong to this class of objects. On the other hand, HD 43587 is slightly more massive and evolved. In addition, marked differences are found in the amount of lithium present in the photospheres of these two stars, which might reveal different mixing properties in their interiors. These results will put tight constraints on

the forthcoming theoretical modelling of their solar-like oscillations and contribute to increase our knowledge of the fundamental parameters and internal structure of stars similar to our Sun.

Accepted by A&A

For preprints contact: morel@astro.ulg.ac.be

For preprints via ftp or WWW: http://www.ster.kuleuven.be/~thierry/articles/hd42618_hd43587.pdf

Radial Velocity Signatures of Zeeman Broadening

A. Reiners[1], D. Shulyak[1], G. Anglada-Escudé[1], S.V. Jeffers[1], J. Morin[1], M. Zechmeister[1], O. Kochukhov[2] and N. Piskunov[2]

[1] Universität Göttingen, Institut für Astrophysik, Friedrich-Hund-Platz 1, 37077 Göttingen, Germany
[2] Department of Physics and Astronomy, Uppsala University, Box 516, 751 20 Uppsala, Sweden

Stellar activity signatures such as spots and plages can significantly limit the search for extrasolar planets. Current models of activity-induced radial velocity (RV) signals focus on the impact of temperature contrast in spots according to which they predict the signal to diminish toward longer wavelengths. The Zeeman effect on RV measurements counteracts this: the relative importance of the Zeeman effect on RV measurements should grow with wavelength because the Zeeman displacement itself grows with λ, and because a magnetic and cool spot contributes more to the total flux at longer wavelengths. In this paper, we model the impact of active regions on stellar RV measurements including both temperature contrast in spots and line broadening by the Zeeman effect. We calculate stellar line profiles using polarized radiative transfer models including atomic and molecular Zeeman splitting over large wavelength regions from 0.5 to 2.3 μm. Our results show that the amplitude of the RV signal caused by the Zeeman effect alone can be comparable to that caused by temperature contrast; a spot magnetic field of $\sim$1000 G can produce a similar RV amplitude as a spot temperature contrast of $\sim$1000 K. Furthermore, the RV signal caused by cool *and* magnetic spots increases with wavelength, in contrast to the expectation from temperature contrast alone. We also calculate the RV signal caused by variations in average magnetic field strength from one observation to the next, for example due to a magnetic cycle, but find it unlikely that this can significantly influence the search for extrasolar planets. As an example, we derive the RV amplitude of the active M dwarf AD Leo as a function of wavelength using data from the HARPS spectrograph. Across this limited wavelength range, the RV signal does not diminish at longer wavelengths but shows evidence for the opposite behavior, consistent with a strong influence of the Zeeman effect. We conclude that the RV signal of active stars does not vanish at longer wavelength but sensitively depends on the combination of spot temperature and magnetic field; in active low-mass stars, it is even likely to grow with wavelength.

Accepted by A&A

For preprints contact: Ansgar.Reiners@phys.uni-goettingen.de

For preprints via ftp or WWW: http://arxiv.org/abs/1301.2951

Study of Photospheric, Chromospheric and Coronal Activities of V1147 Tau

Manoj K. Patel[1], J. C. Pandey[2], Igor S. Savanov[3], Vinod Prasad[1], D. C. Srivastava[1]

[1]Department of Physics, D. D. U. Gorakhpur University, Gorakhpur - 273009, India
[2]Aryabhatta Research Institute of Observational Sciences (ARIES), Nainital - 263 129, India
[3] Institute of Astronomy, Russian Academy of Sciences, ul. Pyatnitskaya 48, Moscow, 119017 Russia

We present analyses of optical photometric, spectroscopic, polarimetric, and X-ray observations of the K5V binary star, V1147 Tau. Nearly twenty years of optical observations show that V1147 Tau is a periodic variable with a photometric period of 1.4845 ± 0.0001 days. Light curves observed at 16 epochs show changes in minima, amplitude and shape indicating that the variability is due to the presence of surface inhomogeneities. The surface coverage of spots was found to be in the range of 9-22 per cent. Most of the time, the spots were resolved as two active longitudes. Switching of dominant active longitudes was also seen. The optical spectroscopy revealed that Hα is present in emission, indicating a high level of chromospheric activity. The polarimetric observations yield average values of polarization to be 0.40 ± 0.03, 0.22 ± 0.05, 0.17 ± 0.07 and 0.12 ± 0.04 per cent in B, V, R and I bands, respectively, which indicates the possibility of scattering by thin circumstellar material. The X-ray light curve was found to be rotationally modulated and was anti-correlated with optical light curves observed at quasi-simultaneous

epochs. The corona of V1147 Tau consists of a two temperature plasma with $kT_1 = 0.07$ keV and $kT_2 = 0.66$ keV. The X-ray luminosity in the 0.2-2.4 keV energy band was found to be $4.4 - 6.8 \times 10^{29}$ erg s^{-1}. Flaring features were also seen in the X-ray light curve.

Accepted by MNRAS

For preprints contact: jeewan@aries.res.in

For preprints contact: http://mnras.oxfordjournals.org/

The UV and X-ray Activity of the M Dwarfs Within 10 pc of the Sun

B.Stelzer[1], A.Marino[2], G.Micela[1], J.López-Santiago[3] and C.Liefke[4]

[1] INAF - Osservatorio Astronomico di Palermo, Piazza del Parlamento 1, 90134 Palermo, Italy
[2] Dipartimento di Fisica e Astronomia, G. Galilei, vicolo dell'Osservatorio 3, 35122 Padova, Italy
[3] Departamento de Astrofísica y Ciencias de la Atmósfera, Facultad de Ciencias Físicas, Universidad Complutense de Madrid, 28040 Madrid, Spain
[4] Zentrum für Astronomie der Universität Heidelberg, Mönchhofstrasse 12-14, 69120 Heidelberg, Germany

M dwarfs are the most numerous stars in the Galaxy. They are characterized by strong magnetic activity. The ensuing high-energy emission is crucial for the evolution of their planets and the eventual presence of life on them. We systematically study the X-ray and ultraviolet emission of a subsample of M dwarfs from a recent proper-motion survey, selecting all M dwarfs within 10 pc to obtain a nearly volume-limited sample (~ 90 % completeness). Archival ROSAT, XMM-Newton and GALEX data are combined with published spectroscopic studies of Hα emission and rotation to obtain a broad picture of stellar activity on M dwarfs. We make use of synthetic model spectra to determine the relative contributions of photospheric and chromospheric emission to the ultraviolet flux. We also analyse the same diagnostics for a comparison sample of young M dwarfs in the TW Hya association (~ 10 Myrs). We find that generally the emission in the GALEX bands is dominated by the chromosphere but the photospheric component is not negligible in early-M field dwarfs. The surface fluxes for the Hα, near-ultraviolet, far-ultraviolet and X-ray emission are connected via a power law dependence. We present here for the first time such flux-flux relations involving broad-band ultraviolet emission for M dwarfs. Activity indices are defined as flux ratio between the activity diagnostic and the bolometric flux of the star in analogy to the Ca II $R'_{\rm HK}$ index.

For given spectral type these indices display a spread of $2 - 3$ dex which is largest for M4 stars. Strikingly, at mid-M spectral types the spread of rotation rates is also at its highest level. The mean activity index for fast rotators, likely representing the saturation level, decreases from X-rays over the FUV to the NUV band and Hα, i.e. the fractional radiation output increases with atmospheric height. The comparison to the ultraviolet and X-ray properties of TW Hya members shows a drop of nearly three orders of magnitude for the luminosity in these bands between ~ 10 Myr and few Gyrs age. A few young field dwarfs (< 1 Gyr) in the 10 pc sample bridge the gap indicating that the drop in magnetic activity with age is a continuous process. The slope of the age decay is steeper for the X-ray than for the UV luminosity.

Accepted by MNRAS (arXiv:1302.1061)

For preprints contact: stelzer@astropa.inaf.it

For preprints via ftp or WWW: http://www.astropa.unipa.it/~stelzer/publications.html

Solar Abstracts

Mass Estimates of Rapidly-Moving Prominence Material from High-Cadence EUV Images

David R. Williams[1], Deborah Baker[1] and Lidia van Driel-Geszelyi[1,2,3]

[1] Mullard Space Science Laboratory, University College London, Holmbury St Mary, Surrey, RH5 6NT, United Kingdom
[2] LESIA-Observatoire de Paris, CNRS, UPMC Univ. Paris 06, Univ. Paris-Diderot, 92195 Meudon, France
[3] Konkoly Observatory, Budapest, Hungary

We present a new method for determining the column density of erupting filament material using state-of-the-art multi-wavelength imaging data. Much of the prior work on filament/prominence structure can be divided between studies that use a polychromatic approach with targeted campaign observations, and those that use synoptic observations, frequently in only one or two wavelengths. The superior time resolution, sensitivity and near-synchronicity of data from the *Solar Dynamics Observatory*'s Advanced Imaging Assembly allow us to combine these two techniques using photo-ionisation continuum opacity to determine the spatial distribution of hydrogen in filament material. We apply the combined techniques to *SDO*/AIA observations of a filament which erupted during the spectacular coronal mass ejection on 2011 June 07. The resulting "polychromatic opacity imaging" method offers a powerful way to track partially ionised gas as it erupts through the solar atmosphere on a regular basis, without the need for co-ordinated observations, thereby readily offering regular, realistic mass-distribution estimates for models of these erupting structures.

Accepted by ApJ

For preprints contact: d.r.williams@ucl.ac.uk

The Infrared Colors of the Sun

Luca Casagrande[1], Ivan Ramírez[2], Jorge Meléndez[3] and Martin Asplund[1]

[1] Research School of Astronomy & Astrophysics, Mount Stromlo Observatory, The Australian National University, ACT 2611, Australia
[2] McDonald Observatory and Department of Astronomy, University of Texas at Austin, 1 University Station, C1400 Austin, Texas 78712-0259, USA
[3] Departamento de Astronomia do IAG/USP, Universidade de São Paulo, Rua do Mãtao 1226, São Paulo, 05508-900, SP, Brazil

Solar infrared colors provide powerful constraints on the stellar effective temperature scale, but to this purpose they must be measured with both accuracy and precision. We achieve this requirement by using line-depth ratios to derive in a model independent way the infrared colors of the Sun, and use the latter to test the zero-point of the Casagrande et al. (2010) effective temperature scale, confirming its accuracy. Solar colors in the widely used 2MASS JHK_s and WISE $W1\,W2\,W3\,W4$ systems are provided: $(V-J)_\odot = 1.198$, $(V-H)_\odot = 1.484$, $(V-K_s)_\odot = 1.560$, $(J-H)_\odot = 0.286$, $(J-K_s)_\odot = 0.362$, $(H-K_s)_\odot = 0.076$, $(V-W1)_\odot = 1.608$, $(V-W2)_\odot = 1.563$, $(V-W3)_\odot = 1.552$, $(V-W4)_\odot = 1.604$. A cross check of the effective temperatures derived implementing 2MASS or WISE magnitudes in the infrared flux method (IRFM) confirms that the absolute calibration of the two systems agree within the errors, possibly suggesting a 1% offset between the two, thus validating extant near and mid infrared absolute calibrations. While 2MASS magnitudes are usually well suited to derive $T_{\rm eff}$, we find that a number of solar like stars exhibit anomalous WISE colors. In most cases this effect is spurious and traceable to lower quality measurements, although for a couple of objects (3 ± 2% of the total sample) it might be real and hints towards the presence of warm/hot debris disks.

Published in ApJ: 2012, 761, 15

For preprints contact: luca@mso.anu.edu.au

For preprints via ftp or WWW: http://arxiv.org/abs/1209.6127

Is the Sun Lighter than the Earth? Isotopic CO in the Photosphere, Viewed Through the Lens of 3D Spectrum Synthesis

Thomas R. Ayres[1], J. R. Lyons[2], H.-G. Ludwig[3], E. Caffau[3], and S. Wedemeyer-Böhm[4]

[1] Center for Astrophysics and Space Astronomy, University of Colorado, Boulder, CO 80309, USA
[2] Department of Earth and Space Sciences, University of California, Los Angeles, CA, USA
[3] Zentrum für Astronomie der Universität Heidelberg, Heidelberg, Germany
[4] Institute of Theoretical Astrophysics, University of Oslo, Oslo, Norway

We consider the formation of solar infrared (2–6 μm) rovibrational bands of carbon monoxide (CO) in CO5BOLD 3D convection models, with the aim to refine abundances of the heavy isotopes of carbon (^{13}C) and oxygen (^{18}O, ^{17}O), to compare with direct capture measurements of solar wind light ions by the *Genesis* Discovery Mission. We find that previous, mainly 1D, analyses were systematically biased toward lower isotopic ratios (e.g., $R_{23} \equiv {}^{12}\mathrm{C}/{}^{13}\mathrm{C}$), suggesting

an isotopically "heavy" Sun contrary to accepted fractionation processes thought to have operated in the primitive solar nebula. The new 3D ratios for ^{13}C and ^{18}O are: $R_{23} = 91.4\pm1.3$ ($R_\oplus = 89.2$); and $R_{68} = 511\pm10$ ($R_\oplus = 499$), where the uncertainties are $1\,\sigma$ and "optimistic." We also obtained $R_{67} = 2738\pm118$ ($R_\oplus = 2632$), but we caution that the observed ^{12}C^{17}O features are extremely weak. The new solar ratios for the oxygen isotopes fall between the terrestrial values and those reported by *Genesis* ($R_{68} = 530$, $R_{67} = 2798$), although including both within 2 σ error flags, and go in the direction favoring recent theories for the oxygen isotope composition of Ca–Al inclusions (CAI) in primitive meteorites. While not a major focus of this work, we derive an oxygen abundance, $\epsilon_{\rm O} \sim 603\pm9$ ppm (relative to hydrogen; $\log\epsilon \sim 8.78$ on the H = 12 scale). That the Sun likely is lighter than the Earth, isotopically speaking, removes the necessity to invoke exotic fractionation processes during the early construction of the inner solar system.

Accepted by ApJ

For preprints contact: Thomas.Ayres@Colorado.edu

For preprints via ftp or WWW: http://stacks.iop.org/0004-637X/765/46

The AD775 Cosmic Event Revisited: The Sun is to Blame

I.G. Usoskin[1], B. Kromer[2], F. Ludlow[3], J. Beer[4], M. Friedrich[5], G. A. Kovaltsov[6], S. K. Solanki[7,8] and L. Wacker[9]

[1] Sodankylä Geophysical Observatory (Oulu unit) and Physics Dept., University of Oulu, Finland
[2] Klaus-Tschira-Laboratory for Scientific Dating, Curt-Engelhorn-Centre for Archaeometry, D6, 3, 68159 Mannheim, Germany
[3] Harvard University Center for the Environment, and Department of History, Harvard University, Cambridge, MA
[4] Swiss Federal Institute of Aquatic Scbrickience and Technology, Eawag, Überlandstrasse 133, 8600 Dübendorf, Switzerland
[5] Hohenheim University, Institute of Botany (210), D-70593 Stuttgart, Germany
[6] Ioffe Physical-Technical Institute, 194021 St. Petersburg, Russia
[7] Max Planck Institute for Solar System Research, Max-Planck-Str. 2, D-37191 Katlenburg-Lindau, Germany
[8] School of Space Research, Kyung Hee University, Yongin, Gyeonggi 446-701, Korea
[9] Department of Physics, Swiss Federal Institute of Technology ETHZ, Zurich, Switzerland

Miyake et al. (henceforth M12) recently reported, based on ^{14}C data, an extreme cosmic event in about AD775. Using a simple model, M12 claimed that the event was too strong to be caused by a solar flare within the standard theory. This implied a new paradigm of either an impossibly strong solar flare or a very strong cosmic ray event of unknown origin that occurred around AD775. However, as we show, the strength of the event was significantly overestimated by M12. Several subsequent works have attempted to find a possible exotic source for such an event, including a giant cometary impact upon the Sun or a gamma-ray burst, but they are all based on incorrect estimates by M12. We revisit this event with analysis of new datasets and consistent theoretical modelling. We verified the experimental result for the AD775 cosmic ray event using independent datasets including ^{10}Be series and newly measured ^{14}C annual data. We surveyed available historical chronicles for astronomical observations for the period around the AD770s to identify potential sightings of aurorae borealis and supernovae. We interpreted the ^{14}C measurements using an appropriate carbon cycle model. We show that: (1) The reality of the AD775 event is confirmed by new measurements of ^{14}C in German oak; (2) by using an inappropriate carbon cycle model, M12 strongly overestimated the event's strength; (3) The revised magnitude of the event (the global ^{14}C production Q=(1.1–1.5)$\cdot10^8$ atoms/cm^2) is consistent with different independent datasets (^{14}C, ^{10}Be, ^{36}Cl) and can be associated with a strong, but not inexplicably strong, solar energetic particle event (or a sequence of events), and provides the first definite evidence for an event of this magnitude (the fluence $>$ 30 MeV was about $4.5\cdot10^{10}$ cm^{-2}) in multiple datasets; (4) This interpretation is in agreement with increased auroral activity identified in historical chronicles. The results point to the likely solar origin of the event, which is now identified as the greatest solar event on a multi-millennial time scale, placing a strong observational constraint on the theory of explosive energy releases on the Sun and cool stars.

Accepted by: Astron. Astrophys. Lett. (in press)

For preprints contact: ilya.usoskin@oulu.fi

For preprints via ftp or WWW: http://arxiv.org/abs/1302.6897

An Extensive Search for Rapid Optical Variability in Ultracool Dwarfs

Chris Koen[1]

[1] Department of Statistics, University of the Western Cape, Bellville, South Africa

A summary is given of optical time series photometry of 125 ultracool dwarfs. The observing strategy was to monitor each object continuously for 2-3 hours, in order to ascertain whether it was rapidly variable. Many of the targets were observed at multiple epochs, to follow up possible short timescale variability, or to test for slow brightness changes on longer timescales. The 353 datasets obtained contain nearly 22 000 individual measurements. Optical (I_C) magnitudes, accurate to roughly 0.1-0.2 mag, were derived for 21 objects for which there is no optical photometry in the literature. It is shown that photometry is affected by variable seeing in a large percentage of the time series observations. Since this could give the appearance of variability intrinsic to the objects, magnitudes are modelled as functions of both time and seeing. Several ultracool dwarfs which had not been monitored before are variable, according to certain model fitting criteria. A number of objects with multi-epoch observations appear to be variable on longer timescales. Since testing for variability is far from straightforward, the time series data are made available so that interested readers can perform their own analyses.

Accepted by MNRAS

For preprints contact: ckoen@uwc.ac.za

Multicolour Time Series Photometry of Three Periodic Ultracool Dwarfs

Chris Koen[1]

[1] Department of Statistics, University of the Western Cape, Bellville, South Africa

Photometry in I, or contemporaneously in I and R, of the known variable ultracool dwarfs Kelu-1 and 2MASS J11553952-3727350 is presented. The nature of the variability of Kelu-1 appears to evolve on timescales of a day or less. Both the period and amplitude of the variability of 2MASS J11553952-3727350 have changed substantially since publication of earlier observations of the object. DENIS 1454-6604 is a new variable ultracool dwarf, with persistent and prominent brightness modulations at a period of 2.6 h.

Accepted by MNRAS

For preprints contact: ckoen@uwc.ac.za

Cross-Listed Abstracts (Pre-Main Sequence Stars)

Editor's Note: The abstracts below are being cross-listed with the *Star Formation Newsletter.*

X-Ray Determination of the Variable Rate of Mass Accretion onto TW Hydrae

N. S. Brickhouse[1], S. R. Cranmer[1], A. K. Dupree[1], H. M. Günther[1], G. J. M. Luna[1,2]

[1] Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138 USA
[2] Instituto de Astronomia y Fisica del Espacio, (IAFE), Buenos Aires, Argentina

Diagnostics of electron temperature (T_e), electron density (n_e), and hydrogen column density (N_H) from the *Chandra* High Energy Transmission Grating spectrum of He-like ion Ne IX in TW Hydrae (TW Hya), in conjunction with a classical accretion model, allow us to infer the accretion rate onto the star directly from measurements of the accreting material. The new method introduces the use of the absorption of Ne IX lines as a measure of the column density of the intervening, accreting material. On average, the derived mass accretion rate for TW Hya is 1.5×10^{-9} $M_\odot$ yr^{-1}, for a stellar magnetic field strength of 600 Gauss and a filling factor of 3.5%. Three individual *Chandra* exposures show statistically significant differences in the Ne IX line ratios, indicating changes in N_H, T_e, and n_e by factors of 0.28, 1.6, and 1.3, respectively. In exposures separated by 2.7 days, the observations reported here suggest a five-fold reduction in the accretion rate. This powerful new technique promises to substantially improve our understanding of the accretion process in young stars.

Published: 2012, ApJ, 760, L21

For preprints contact: nbrickhouse@cfa.harvard.edu

Continued →

Upcoming Meeting

First Announcement

Workshop on 400 Years of Stellar Rotation

17 - 22 November 2013

Natal, Brazil

Dear colleagues,

We are pleased to announce the workshop *400 Years of Stellar Rotation*, to celebrate four centuries of astronomical research after the public announcement of solar rotation by Galileo Galilei. The conference is co-sponsored by the European Southern Observatory and the International Institute of Physics of Natal, and will be held at the Ocean Palace Beach Resort in Natal, Brazil, from Sunday, November 17, to Friday, November 22, 2013.

Main Topics:

- Rotation: From Galileo to CoRoT and Kepler
- Evolutionary models of rotating stars
- The impact of rotation on Solar and Stellar Physics
- The solar rotation profile
- Rotation, winds, magnetic fields and stellar activity
- Observations of rotating stars
- Rotation and chemical abundances
- Rotation, stellar formation and evolution
- Rotation and stellar multiplicity
- Rotation in the final evolutionary stages
- Stellar rotation, activity, and planets

SOC : Adriana Valio, Mackenzie University (São Paulo, Brazil), Andre Maeder, Geneva Observatory (Geneva, Switzerland), Beatriz Barbuy, São Paulo University (São Paulo, Brazil), Claudio Melo, European Southern Observatory (Santiago, Chile) - **Co-Chair**, Eduardo Janot Pacheco, São Paulo University (São Paulo, Brazil), Ferdinando Patat, European Southern Observatory (Garching, Germany), Georges Meynet, Geneva Observatory (Geneva, Switzerland), José Renan de Medeiros, Federal University of Rio Grande do Norte (Natal, Brazil) - **Chair**, Klaus G. Strassmeier, Leibniz-Institut für Astrophysik Potsdam (Potsdam, Germany), Luca Pasquini, European Southern Observatory (Garching, Germany) - **Co-Chair**, Márcio Catelan, Pontificia Universidad Católica de Chile (Santiago, Chile), Marc Pinsonneault, Ohio State University (Columbus, USA), Nuno Santos, Porto University (Porto, Portugal), Antonino Lanza, INAF - Osservatorio Astrofisico di Catania (Catania, Italy), Rodolfo Smiljanic, Nicolaus Copernicus Astronomical Center (Toruń, Poland), Rolf-Peter Kudritzki, University of Hawaii (Honolulu, USA)

Conference Web Page: General information, including Registration and Travel and Lodging can be found on the conference website:
http://www.dfte.ufrn.br/400rotation

On behalf of the Scientific Organizing Committee, Jos Renan de Medeiros, Chair

Email: rotation400@dfte.ufrn.br

Upcoming Meeting

2nd Circular, International Conference

Physics at the Magnetospheric Boundary (Neutron Stars, White Dwarfs and Young Stellar Objects)

25 - 28 June 2013

University of Geneva, Switzerland

The *Physics at the Magnetospheric Boundary* conference is aimed at bringing together specialists working theoretically, numerically and observationally on processes occurring at the limit of the magnetically dominated region around accreting objects such as: Neutron Stars, White Dwarfs, and Young Stellar Objects.

The conference represents a precious opportunity of exchange between research groups working on the topic of accretion, across different wavelengths and source types. It poses the basis for the next steps forward in our understanding of the physics at the magnetospheric boundary.

Planned sessions for the conference include:

Theory of accretion onto magnetized stars
Numerical modelling of plasma-field interaction
Accretion and jets production
Observational clues to the physics at the magnetosphere
Future perspectives in theory and observations

Registration and grant applications for students:

http://www.isdc.unige.ch/magbound/index.php/registration

Invited Speakers, Program and other details are available on the conference website:

http://www.isdc.unige.ch/magbound/

For any information, please contact:

magbound.webmaster@gmail.com

Upcoming Meeting

Second Announcement

Space Climate Symposium-5

15 - 19 June 2013

Oulu, Finland

Dear Colleagues and Friends!

We remind you of the upcoming *Space Climate Symposium-5 - Under the midnight Sun* at the seaside Hotel Eden in Oulu, Finland, on 15.-19. June, 2013.

Symposium includes all aspects of the long-term change in the Sun and its effects in the heliosphere and in the near-Earth environment, including the Earths atmosphere and climate. Special focus this time will be on studies on the causes, consequences and implications of the present, unusually low solar activity, on long-term occurrence of solar extreme events, on possible planetary influence on solar activity and on solar wind effects on atmosphere and climate.

Confirmed solicited speakers include, e.g., Jose Abreu, Rainer Arlt, Jrg Beer, Axel Brandenburg, Paul Charbonneau, Frdric Clette, Ed Cliver, Ingrid Cnossen, Ana Elias, Walter Gonzalez, Bidya Karak, Gang Li, Fusa Miyake, Dario Passos, Indrani Roy, Eugene Rozanov, Alexander Ruzmaikin, Kiyoto Shibasaki, Karel Schrijver, Kazunari Shibata, Sami Solanki, Leif Svalgaard, Jos Vaquero, Dong Wu, Thomas von Clarmann, and Seiji Yashiro.

Important dates:

15 March 2013 Deadline for abstract submission
15 May 2013 Deadline for accommodation at special price
15 May 2013 Deadline for early-bird registration at 350 Euros (thereafter 400 Euros)

For more information on registration, symposium program, travel, accommodation etc. see the symposium website:

http://www.spaceclimate.fi

In case of questions contact: spaceclimate@oulu.fi

We warmly welcome you to Space Climate 5 in Oulu!

Sincerely Yours,

Timo Asikainen (LOC chair) Kalevi Mursula (SOC chair) Ilpo Virtanen (LOC vice-chair) Ilya Usoskin (SOC vice-chair)

Upcoming Meeting

EWASS Special Session 3

Fundamental Stellar Parameters

8 July 2013

Turku, Finland

FIRST ANNOUNCEMENT

Dear colleagues:

On July 8-12th 2013 the European Week of Astronomy and Space Science (EWASS) will take place in Turku, Finland. Within that week we are organizing a Special Session on Fundamental Stellar Parameters. We aim at gathering experts on the various approaches to derive stellar parameters (spectroscopy, photometry, interferometry, asteroseismology, etc.), to discuss the status in each field, remaining discrepancies among different methods and ways to settle them. This is crucial to make best use of existing and upcoming surveys on stellar and Galactic astrophysics (Kepler, Gaia, GES, VISTA etc.)

More details on the program of the EWASS week and of our Special Session at:

http://www.astro.utu.fi/EWASS2013/

http://users.utu.fi/lporti/EWASS2013/Fundamental/SpecialSession3-EWASS2013.html

Registrations to the EWASS week is now open. The deadline for abstract submission and early registration will be in early April. Both oral and poster contributions are welcome.

For further information, please check for updates on our web-site, and do not hesitate to contact us at:

fspewass2013@utu.fi

On behalf of the Scientific Organizing Committee:

Luca Casagrande and Laura Portinari

Job Opening

PhD Research Fellowship in Astrophysics

Solar/Stellar Physics

Institute of Theoretical Astrophysics

University of Oslo, Norway

A position as PhD research fellow is available at the Institute of Theoretical Astrophysics, University of Oslo, Norway. The fellowship is for a period of up to 3 years. The preferred starting date is 1.10.2013 but alternative dates between 1.9.2013 and 1.12.2013 are possible.

The PhD position is connected to the solar physics group, which is renowned for its detailed modelling of the solar atmosphere with radiative magnetohydrodynamics, and for innovative data

analysis methods for high cadence imaging and spectroscopic observations. The research activities are now extended towards the atmospheres of cool stars.

The selected candidate would contribute to the project *Vortex flows and magnetic tornadoes on the Sun and cool stars*, which combines high-resolution observations of the Sun with world-leading facilities like the ground-based Swedish 1-m Solar Telescope (SST) and the space-borne observatories Solar Dynamics Observatory (SDO) and Interface Region Imaging Spectrograph (IRIS) and advanced numerical simulations with state-of-the-art 3-D radiative magnetohydrodynamics computer codes. Depending on the background and interests of the selected candidate, focus of the PhD project can be on observational and/or numerical modelling aspects of the project.

Qualifications: Applicants must hold a Masters degree or equivalent in astrophysics, physics or computational science. A good command of English is required. Programming skills are considered an asset.

The application must include: (1) Application letter, (2) CV (summarizing education, positions and academic work, scientific publications), (3) copies of educational certificates and transcript of records, (4) list of publications and academic work that the applicant wishes to be considered by the evaluation committee, and (5) names and contact details of 2-3 references who have been asked to send reference letters. Foreign applicants are advised to attach an explanation of their University's grading system. Please remember that all documents should be in English or a Scandinavian language.

Application deadline: 1. May 2013

Reference number: 2013/2997

Contact: Dr. Sven Wedemeyer-Böhm
Telephone: +47 228 56 520
e-mail: sven.wedemeyer@astro.uio.no

More information and online application portal at:

http://uio.easycruit.com/vacancy/933285/64278

Abstract Guidelines

Abstracts for *COOLNEWS* are solicited for papers that have been recently accepted by or submitted to refereed journals, and for recent Ph.D. theses. Abstracts for conference proceedings articles are *not* posted in *COOLNEWS*. The subject matter should pertain directly to cool stars (spectral types F,G,K,M or L), substellar objects, or the sun. Both theoretical and observational abstracts are appropriate.

Abstracts dealing with cool pre-main-sequence (PMS) stars will generally not be included in *COOLNEWS*, since they are already covered by the *Star Formation Newsletter*. Exceptions to this rule will be considered if the subject matter is truly cross-disciplinary. If you wish to submit a cross-disciplinary abstract on PMS stars, then first submit it to the *Star Formation Newsletter*. After doing so, submit the abstract to *COOLNEWS* accompanied by a short e-mail stating that it has already been submitted to the *Star Formation Newsletter*, and summarizing why it will be of interest to the cool star/solar community at large.

A bimonthly call for abstracts will be issued. Announcements of general interest to the cool star and solar communities may also be submitted for posting in the newsletter. These might include (but are not restricted to) the following: (i) *Job Openings* directed toward cool star or solar researchers, (ii) announcements of *Upcoming Meetings*, (iii) announcements of *Upcoming Observing Campaigns* for which participation is solicited from the community at large, (iv) reviews of *New Books*, and (v) *General Announcements* that provide or request research-related information. Please send all correspondence to the editor at coolnews@jila.colorado.edu. Abstract templates and back issues can be obtained from the COOLNEWS Web-page at

`http://casa.colorado.edu/~skinners/coolnews.html .`

*** Please send abstracts in the body of the message and *not* as attachments.***