COOLNEWS

A RESEARCH NEWSLETTER DEDICATED TO COOL STARS AND THE SUN

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Editor's Note

Due to summer holidays, I won't be sending out an issue in August. The next issue will go out in early September.

Just a reminder that if you prefer not to use the Latex format for *Coolnews*, the newsletter can be obtained directly in PDF or Postscript format from the web page at

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

Steve Skinner (ed.)

Stellar Abstracts

New Constraints from the Hα Line for the Temperature of the Transiting Planet Host Star OGLE-TR-10

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The spectroscopic analysis of systems with transiting planets gives strong constraints on planetary masses and radii as well as the chemical composition of the systems. The properties of the system OGLE-TR-10 are not well-constrained, partly due to the discrepancy of previous measurements of the effective temperature of the host star.
This work, which is fully independent from previous works in terms of data reduction and analysis, uses the Hα profile in order to get an additional constraint on the effective temperature. We take previously published *UVES* observations which have the highest available signal-to-noise ratio for OGLE-TR-10. A proper normalization to the continuum is done using intermediate data products of the reduction pipeline of the *UVES* spectrograph. The effective temperature

then is determined by fitting synthetic Hα profiles to the observed spectrum.
With a result of effective temperature of 6020 ± 140 K, the Hα profile clearly favours one of the previous measurements. The Hα line is further consistent with dwarf-like surface gravities as well as solar and super-solar metallicities previously derived for OGLE-TR-10.
The Hα line could not be used to its full potential, partly because of the varying shape of the *UVES* Échelle orders after flat field correction. We suggest to improve this feature when constructing future spectrographs.

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Neon and Oxygen in Low Activity Stars: Towards a Coronal Unification With the Sun

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The disagreement between helioseismology and a recent downward revision of solar abundances has resulted in a controversy about the true neon abundance of the Sun and other stars. We investigated XMM-Newton and Chandra high-resolution X-ray spectra of weakly and moderately active stars ($\log L_X/L_{bol} = -5... -7$) and determined their coronal Ne/O abundance ratio by using two linear combinations of strong emission lines as well as a global-fitting method. The sample stars show a correlation between their Ne/O ratio and stellar activity in the sense that stars with a higher activity level show a higher Ne/O ratio. We find that the Ne/O ratio decreases in our sample from values of Ne/O ≈ 0.4 down to Ne/O ≈ 0.2, suggesting that ratios similar to 'classical' solar values are rather common for low activity stars. A significantly enhanced neon abundance as the solution to the solar modeling problem seems unlikely. We find no indications of a peculiar position of the Sun among other stars.

Accepted by A&A

For preprints via WWW: http://xxx.lanl.gov/abs/0806.0775

Quiescent X-ray emission from the M9 dwarf LHS 2065

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We investigated an archival XMM-Newton observation of LHS 2065, an ultracool dwarf with spectral type M9. We clearly detect LHS 2065 at soft X-ray energies in less than 1 h effective exposure time above the 3 sigma level with the PN and MOS1 detector. No flare signatures are present and we attribute the X-ray detection to quasi-quiescent activity. From the PN data we derive an X-ray luminosity of $L_X = 2.2 \pm 0.7 \times 10^{26}$ erg/s in the 0.3–0.8 keV band, the corresponding activity level of $\log L_X/L_{bol} = -3.7$ points to a rather active star. Indications for minor variability and possible accompanying spectral changes are present, however the short exposure time and poor data quality prevents a more detailed analysis. LHS 2065 is one of the coolest and least massive stars that emits X-rays at detectable levels in quasi-quiescence, implying the existence of a corona.

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For preprints via WWW: http://xxx.lanl.gov/abs/0806.3863

Active Cool Stars and He I 10830 Å: The Coronal Connection

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Context. The mechanism of formation of the He I 10830 Å triplet in cool stars has been subject of debate for the last 30 years. A relation between the X-ray luminosity and the He I 10830 Å flux was found in cool stars, but the dominant mechanism of formation in these stars (photoionization by coronal radiation followed by recombination and cascade, or collisional excitation in the chromosphere), has not yet been established.
Aims. We use modern instrumentation (NOT/SOFIN) and a direct measurement of the EUV flux, which photoionizes

He I, to investigate the formation mechanism of the line for the most active stars which are frequently excluded from analysis.
Methods. We have observed with an unprecedented resolution ($R \sim 170,000$) the He I 10830 Å triplet in a set of 15 stars that were also observed with the Extreme Ultraviolet Explorer (EUVE) in order to compare the line strengths with their EUV and X-ray fluxes.
Results. Active dwarf and subgiant stars do not exhibit a relation between the EUV flux and the equivalent width of the He I 10830 Å line. Giant stars however, show a positive correlation between the strength of the He I 10830 Å absorption and the EUV and X-ray fluxes. The strength of the C IV 1550 Å emission does not correlate with coronal fluxes in this sample of 15 stars.
Conclusions. Active dwarf stars may have high chromospheric densities thus allowing collisional excitation to dominate photoionization/recombination processes in forming the He I 10830 Å line. Active giant stars possess lower gravities, and lower chromospheric densities than dwarfs, allowing for photoexcitation processes to become important. Moreover, their extended chromospheres allow for scattering of infrared continuum radiation, producing strong absorption in He I and tracing wind dynamics.

Accepted by A&A

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For preprints via WWW: http://es.arxiv.org/abs/0807.0175

M Dwarfs: Effective Temperatures, Radii and Metallicities

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We empirically determine effective temperatures and bolometric luminosities for a large sample of nearby M dwarfs, for which high accuracy optical and infrared photometry is available. We introduce a new technique which exploits the flux ratio in different bands as a proxy of both effective temperature and metallicity. Our temperature scale for late type dwarfs extends well below 3000 K (almost to the brown dwarf limit) and is supported by interferometric angular diameter measurements above 3000 K. Our metallicities are in excellent agreement (usually within 0.2 dex) with recent determinations via independent techniques. A subsample of cool M dwarfs with metallicity estimates based on hotter *Hipparcos* common proper–motion companions indicates our metallicities are also reliable below 3000 K, a temperature range unexplored until now. The high quality of our data allow us to identify a striking feature in the bolometric luminosity versus temperature plane, around the transition from K to M dwarfs. We have compared our sample of stars with theoretical models and conclude that this transition is due to an increase in the radii of the M dwarfs, a feature which is not reproduced by theoretical models.

Accepted by MNRAS

For preprints contact: luccas@utu.fi

For preprints via ftp or WWW: http://arxiv.org/abs/0806.2471

Multiwavelength Observations of a Giant Flare on CN Leonis I. The Chromosphere as Seen in the Optical Spectra

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Flares on dM stars contain plasmas at very different temperatures and thus affect a wide wavelength range in the electromagnetic spectrum. While the coronal properties of flares are studied best in X-rays, the chromosphere of the star is observed best in the optical and ultraviolet ranges. Therefore, multiwavelength observations are essential to study flare properties throughout the atmosphere of a star. We analysed simultaneous observations with UVES/VLT and *XMM-Newton* of the active M5.5 dwarf CN Leo (Gl 406) exhibiting a major flare. The optical data cover the wavelength range from 3000 to 10 000 Å. From our optical data, we find an enormous wealth of chromospheric emission

lines occurring throughout the spectrum. We identify a total of 1143 emission lines, out of which 154 are located in the red arm, increasing the number of observed emission lines in this red wavelength range by about a factor of 10. Here we present an emission line list and a spectral atlas. We also find line asymmetries for H I, He I, and Ca II lines. For the last, this is the first observation of asymmetries due to a stellar flare. During the flare onset, there is additional flux found in the blue wing, while in the decay phase, additional flux is found in the red wing. We interpret both features as caused by mass motions. In addition to the lines, the flare manifests itself in the enhancement of the continuum throughout the whole spectrum, inverting the normal slope for the net flare spectrum.

Accepted by A&A

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For preprints via ftp or WWW: http://de.arxiv.org/abs/0807.2025

Correcting Stellar Oscillation Frequencies for Near-Surface Effects

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In helioseismology, there is a well-known offset between observed and computed oscillation frequencies. This offset is known to arise from improper modeling of the near-surface layers of the Sun, and a similar effect must occur for models of other stars. Such an effect impedes progress in asteroseismology, which involves comparing observed oscillation frequencies with those calculated from theoretical models. Here, we use data for the Sun to derive an empirical correction for the near-surface offset, which we then apply three other stars (α Cen A, α Cen B and β Hyi). The method appears to give good results, in particular providing an accurate estimate of the mean density of each star.

Accepted by ApJ Letters

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For preprints via ftp or WWW: http://adsabs.harvard.edu/abs/arXiv:0807.1769

Solar Abstracts

Magnetic Topology of Blinkers

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Here, we study brightening events in the transition region of the quiet Sun, also called 'blinkers' using co-spatial and co-temporal spectroscopic, imaging and magnetogram data. The aim is to investigate the physical mechanism responsible for blinkers. We use an automated blinker identification procedure (BLIP) to identify blinker events in SoHO/CDS data. The 3D magnetic topology of the magnetic field in the blinker region is reconstructed based on SoHO/MDI magnetogram data. During 3 hrs of SoHO/CDS observations on 2006 January 18, 66 blinkers were identified in the O V 629 Å emission line. Out of them, a group comprising of 16 events were modelled here. They were found to be associated with the emergence of magnetic flux which gave rise to the appearance of, and multiple magnetic reconnection events across, an upper atmosphere (coronal) magnetic null point, along with a loop structure as observed with TRACE. This blinker group results from the release of energy that was accumulated during flux emergence, although whether all blinkers follow the same formation scenario requires further investigation using additional multi-instrument/multi-mission studies.

Accepted by A&A

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For preprints via ftp or WWW: http://star.arm.ac.uk/preprints/ OR astro-ph (arXiv:0806.1869)

RESIK Observations of Helium-like Argon X-ray Line Emission in Solar Flares

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The Ar XVII X-ray line group principally due to transitions $1s^2 - 1s2l$ ($l = s$, p) near 4 Å was observed in numerous flares by the RESIK bent crystal spectrometer aboard *CORONAS-F* between 2001 and 2003. The three line features include the Ar XVII w (resonance line), a blend of x and y (intercombination lines), and z (forbidden line), all of which are blended with Ar XVI dielectronic satellites. The ratio G, equal to $[I(x) + I(y) + I(z)]/I(w)$, varies with electron temperature T_e mostly because of unresolved dielectronic satellites. With temperatures estimated from *GOES* X-ray emission, the observed G ratios agree fairly well with those calculated from CHIANTI and other data. With a two-component emission measure, better agreement is achieved. Some S XV and S XVI lines blend with the Ar lines, the effect of which occurs at temperatures > 8 MK, allowing the S/Ar abundance ratio to be determined. This is found to agree with coronal values. A nonthermal contribution is indicated for some spectra in the repeating-pulse flare of 2003 February 6. Accepted by ApJ Letters *For preprints contact*: kjhp@mssl.ucl.ac.uk *For preprints via ftp or WWW*: http://www.mssl.ucl.ac.uk/∼kjhp/RECENT_PAPERS/Astrophys_J_Letters_RESIK_Arlines.pdf

Possible Traces of Solar Activity Effect on the Surface Air Temperature of Turkey

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In this study we investigate the effects of solar activity on the surface air temperature of Turkey. This enables us to understand the existence of solar activity effects on the temperature. We used surface air temperature, pressure and tropospheric absorbing aerosol data as climate parameters and solar flare index data as solar activity indicator. We considered the parameters temperature and flare index data for the period data ranging from beginning of January 1976 to the end of December 2006, which covers almost three solar cycles 21^st, 22^nd and 23^rd. However, only the period interval starting from January 1980 up to December 2005 includes the tropospheric absorbing aerosol data. We found a significant correlation between solar activity and surface air temperature for only cycle 23. We applied multi taper method to obtain the cyclic behavior of surface air temperature data sets. The most pronounced power peaks were found by this transform to be present at 1.2 and 2.5 years which were reported earlier for some solar activity indicators. We concluded that solar activity effect exists on surface air temperature of Turkey; besides changes of greenhouse gases and tropospheric absorbing aerosols concentration have also a dominant effect on the surface air temperature of Turkey.

Accepted by JASTP

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A Mini-Survey of Ultracool Dwarfs at 4.9 GHz

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A selection of ultracool dwarfs are known to be radio active, with both gyrosynchrotron emission and the electron cyclotron maser instability being given as likely emission mechanisms. Here, we explore whether ultracool dwarfs previously undetected at 8.5 GHz may be detectable at a lower frequency. We select a sample of fast rotating ultracool dwarfs with no detectable radio activity at 8.5 GHz, observing each of them at 4.9 GHz. From the 8 dwarfs in our sample, we detect emission from 2MASS J07464256+2000321, with a mean flux level of 286 $\pm$ 24 μJy. The light-curve of 2MASS J07464256+2000321, is dominated towards the end of the observation by a very bright, $\approx$100 % left circularly polarized burst during which the flux reached 2.4 mJy. The burst was preceded by a raise in the level of activity, with the average flux being $\approx 160\ \mu Jy$ in the first hour of observation rising to $\approx 400\ \mu Jy$ in the 40 minutes before the burst. During both periods, there is significant variability. The detection of 100% circular polarization in the emission at 4.9 GHz points towards the electron cyclotron maser as the emission mechanism. However, the observations at 4.9 GHz and 8.5 GHz were not simultaneous, thus the actual fraction of dwarfs capable of producing radio emission, as well as the fraction of those that show periodic pulsations is still unclear, as indeed are the relative roles played by the electron cyclotron maser instability versus gyrosynchrotron emission, therefore we cannot assert if the previous non-detection at 8.5 GHz was due to a cut-off in emission between 4.9 and 8.4 GHz, or due to long term variability.

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Keck Laser Guide Star Adaptive Optics Monitoring of 2MASS J15344984−2952274AB: First Dynamical Mass Determination of a Binary T Dwarf

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We present multi-epoch, near-infrared imaging of the binary T5.0+T5.5 dwarf 2MASS J15344984−2952274AB obtained with the Keck laser guide star adaptive optics system. Our Keck data achieve sub-milliarcsecond relative astrometry and combined with an extensive (re-)analysis of archival HST imaging, the total dataset spans ~50% the orbital period. We use a Markov Chain Monte Carlo analysis to determine an orbital period of $15.1^{+3.1}_{-1.6}$ yr and a semi-major axis of $2.3^{+0.3}_{-0.2}$ AU. We measure a total mass of $0.056 \pm 0.003\ M_\odot$ ($59 \pm 3\ M_{\rm Jup}$), where the largest uncertainty arises from the parallax. This is the first field binary for which both components are confirmed to be substellar. This is also the coolest and lowest mass binary with a dynamical mass determination to date. Using evolutionary models and accounting for the measurement covariances, we derive an age of 0.78±0.09 Gyr and a mass ratio of $0.936^{+0.012}_{-0.008}$. The relatively youthful age is consistent with the low tangential velocity of this system. For the individual components, we find $T_{\rm eff} = 1028 \pm 17$ K and 978 ± 17 K, $\log(g) = 4.91 \pm 0.04$ and 4.87 ± 0.04 (cgs), and masses of $0.0287 \pm 0.0016\ M_\odot$ ($30.1 \pm 1.7\ M_{\rm Jup}$) and $0.0269 \pm 0.0016\ M_\odot$ ($28.2 \pm 1.7\ M_{\rm Jup}$). These precise values generally agree with previous studies of T dwarfs and affirm current theoretical models. However, (1) the temperatures are about 100 K cooler than derived for similar field objects and suggest that the representative ages of field brown dwarfs may be overestimated. Also, (2) the H-R diagram positions are discrepant with current model predictions and taken at face value would overestimate the masses. While this may arise from large errors in the luminosities and/or radii predicted by evolutionary models, the likely cause is a modest ($\approx$100 K) overestimate in temperature of T dwarfs determined from model atmospheres. We elucidate future tests of theory as the sample of substellar dynamical masses increases. In particular, we suggest that field brown dwarf binaries with dynamical masses ("mass benchmarks") can serve as reference points for $T_{\rm eff}$ and $\log(g)$ and thereby constrain ultracool atmosphere models, as good as or even better than single brown dwarfs with

age estimates ("age benchmarks").

Accepted by ApJ

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The 0.8–14.5 μm Spectra of Mid-L to Mid-T Dwarfs: Diagnostics of Effective Temperature, Grain Sedimentation, Gas Transport and Surface Gravity

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We present new 5.2–14.5 μm low-resolution spectra of 14 mid-L to mid-T dwarfs. We also present new 3.0–4.1 μm spectra for five of these dwarfs. These data are supplemented by existing red and near-infrared spectra ($\sim$ 0.6–2.5 μm), as well as red through mid-infrared spectroscopy of an additional seven L and T dwarfs from an earlier analysis by Cushing et al. (2008). We compare these spectra to those generated from the model atmospheres of Saumon & Marley (2008). The models reproduce the observed spectra of the dwarfs well except for two anomalously red L dwarfs and a T2 dwarf that is better synthesized as an 800 K + 1100 K binary. The wide wavelength coverage allows us to constrain almost independently four model parameters used to describe these photospheres: effective temperature $T_{\rm eff}$, grain sedimentation efficiency $f_{\rm sed}$, vertical gas transport efficiency K_{zz}, and gravity. The sample of L3.5 to T5.5 dwarfs spans the range $1700 \geq T_{\rm eff} \geq 1000$ K, with an L-T transition (L7–T4) that lies between 1500 K and 1100 K, and which may be dependent on gravity. Sedimentation efficiency increases rapidly between T0 and T4, supporting the notion that rapid sedimentation dissolves the condensate clouds at this stage of brown dwarf evolution. The CH_4 bands centered at 2.2, 3.3, and 7.65 μm and the CO band at 2.3 μm are sensitive to K_{zz}, indicating that chemical mixing is important in these atmospheres.

Submitted to ApJ

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Atmospheric Dynamics of Red Supergiant Stars

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Ph.D dissertation directed by: Bertrand Plez

Ph.D degree awarded: June 2008

Thanks to their high-peak infrared luminosity, red supergiant (RSG) stars are fundamental tracers of galactic structure, efficiently probing regions of high interstellar extinction. To understand their properties is crucial and impacts a broad segment of astrophysics.

In this thesis, the answer to the principal questions about RSGs is addressed with three-dimensional radiation hydrodynamic (RHD) models. The computer code CO^{5}BOLD, developed by Freytag, Steffen, Ludwig and collaborators, is used.

First, I have developed a three-dimensional radiative transfer code that computes spectra and intensity maps from RHD simulations. With this tool at hand, I characterize the granulation pattern of the RHD models at different wavelengths and I study the impact of the convection on spectral line in term of line shifts and asymmetries, prospecting line bisectors and photocenter variations for future observations.

Then, I measure the characteristic atmospheric velocities. From the comparison with the observations I find that the simulations are in agreement with the observations even if the velocity amplitudes are smaller than what is observed. Furthermore, the convection-related surface structures show an evident departure from the circular symmetry on the visibility curves and closure phases. I seek constraints of the atmospheric movements analysing these observables and I show where and how the convection pattern can be detected and measured. I conclude that today interferometers are the best way for the characterization of the convection on RSG strars.

Finally, I highlight that the principal problem of RHD simulations is the grey treatment of opacities and I explore the effects on the observables using a first non-grey testing model.

Thesis-related Publications:

Chiavassa, A. 2008, EAS Publications Series, 28, 31
Chiavassa, A., Plez, B., Josselin, E.,
Malbet, F., et al. 2008, ArXiv e-prints, 801, arXiv:0801.2694
& Freytag, B. 2007, SF2A-2007, Eds. p.447
Chiavassa, A., Plez, B., Josselin, E., & Freytag, B. 2006, SF2A-2006, 455
Chiavassa, A., Plez, B., Josselin, E., & Freytag, B. 2006, EAS Publications Series, 18, 177

Announcement

The National Solar Observatory would like to draw the attention of the solar-stellar community to the online availability of integrated "Sun- as-a-star" spectra at selected wavelengths. The spectra are obtained daily by the Integrated Sunlight Spectrometer (ISS) of the SOLIS (Synoptic Optical Long-term Investigations of the Sun) facility on Kitt Peak, Arizona. The ISS data can be downloaded at http://solis.nso.edu/iss/ or by visiting the NSO home page at www.nso.edu and clicking on "SOLIS" where information on the ISS instrument also can be found. The ISS core synoptic program includes high-quality, daily spectra of the Ca II H and K lines, the Ca II triplet line at 854.2 nm, H-alpha and other spectral features obtained at a resolving power of R = 300,000. Time series of derived parameters characterizing the K line are also given. Observers may submit requests for PI programs utilizing the ISS at different wavelengths in either its high or low resolution mode. Please contact the SOLIS Program Scientist, Dr. Aimee Norton (anorton@nso.edu), for information on PI programs using the ISS.

Submitted by: Mark Giampapa

Job Openings

Postdoctoral Position
Stellar MHD and Computational Astrophysics
CEA - Saclay, France

We invite applications for a five year post-doctoral position in magnetohydrodynamics and stellar fluid and plasma dynamics in support of the European ERC-StG project STARS2 (Simulations of Turbulent, Active and Rotating Sun and Stars).

The STARS2 project aims at modelling on massively parallel supercomputers in a self-consistent and three-dimensional way, the complex, time dependent and nonlinear dynamics operating in the Sun and stars. In particular we wish to characterize, study, and constrain the dynamical processes, such as turbulence or dynamo action, acting in stellar convection and/or radiation zones that are at the origin of the wide variety of magnetic activity that is observed.

The position will be held in Service d'Astrophysique (SAp), CEA-Saclay, France. SAp is a world class astrophysical and space science department with more than 150 faculty and staff members, variously studying stellar evolution and dynamics, astrophysical fluid dynamics, planets and stars formation, multi-wavelength astronomy, cosmology, high energy astrophysics. SAp is located about 15 km south of Paris (near Orsay). The growing STARS2 team focuses mostly on multi-D stellar/solar MHD and dynamo action. It is also interested in characterizing the influence of dynamical processes on the evolution of stars via what is called secular MHD and in improving 2-D mean field dynamo models by introducing profiles deduced from 3-D simulations. Further the successful candidate will also benefit from existing and productive scientific collaborations with researchers in Paris, in France, in Europe, and in USA (via the Memorandum of Understanding on Stellar Dynamos between SAp and JILA, Colorado).

The scientific expertise of the candidate should be among one of the following fields: convection, turbulence, MHD, dynamos in stars or planets and computational astrophysics. The successful candidate will build, compute and analyse sophisticated and realistic high performance numerical simulations of the Sun and of stars of various spectral types. To achieve these challenging goals, the candidate will use and extend the 3-D MHD spectral MPI code ASH (anelastic spherical harmonics), as well as the 2-D finite element mean field dynamo code STELEM. The simulations computed within the STARS2 project will be performed on local (linux cluster), national (CNRS-Idris, CEA-CCRT) and European (DEISA) supercomputer centres. Additional information can be found at http://irfu.cea.fr/Projets/STARS2/index.htm ¡https://webmail-e.cea.fr/exchweb/bin/redir.asp? URL=http://irfu.cea.fr/Projets/STARS2/index.htm¿ .

Applicants should have a PhD in astrophysics, plasma physics or geophysics. Prior post doctoral experience would be much appreciated but lack of it should not prevent potential candidates from applying. The applicants should have an outstanding record of research and publications, some experience in managing small scientific projects on their own, and real interest in computational astrophysics and applied mathematics. Depending on experience the candidate could be asked to help the PI co-supervise other less experienced postdocs or PhD students hired within the STARS2 project.

This position funded for up to 5 years by the European Commission via the grant ERC-StG STARS2 will be renewed on a yearly basis depending on scientific progress and achievement. The gross minimum salary will be 34,000EUR annually (2,260EUR net per month), and will be adjusted according to experience and family situation. A minimum of 5,000 EUR per year of travel money will also be provided, in addition to the usual funding support of any French institution. Applications sent before 31 October 2008 will be given top priority, but applications will be considered until the position is filled. The effective work should begin as soon as possible and no later than March 2009.

To apply, please send a resume, list of publications, statement of research interests and experience, and arrange for at least three letters of reference to be sent to:

Dr Allan Sacha BRUN, PI of the European (ERC-StG) Project STARS2, CEA-Saclay, DSM/IRFU/SAp, Bat 709 91191 Gif-sur-Yvette, Cedex France

Email: sacha.brun@cea.fr; Tel: +33 1 6908 7660 (Office), +33 1 6908 6577 (Fax)

Research Assistant
Imaging Vector Magnetograph Data Reduction
NorthWest Research Associates
Boulder, Colorado

NorthWest Research Associates has an opening for a research assistant starting Autumn 2008 in its Boulder, Colorado (CoRA) division. NWRA is a small company with research activities including solar and heliospheric physics, oceanography, meteorology and upper atmospheric research (http://www.nwra.com). This position is to work with Dr. K. D. Leka reducing archive data from the Imaging Vector Magnetograph and developing web-based access for these data and accompanying analysis tools. Additional duties may include data-base preparation to support studies of solar coronal mass ejection initiation and solar flares. While the emphasis of this position is on data archiving, the successful applicant will also have a prime opportunity to participate in original scientific research under the guidance of Dr. Leka. The position is preferably full time; applicants must have or be completing a Bachelor's Degree in computer science, physics, applied math or a related field, with demonstrated knowledge of Linux and experience in a scientific programming language. Experience with SQL database and web programming (PHP, Ruby/Rails, Python) is a significant plus. Applications should include a curriculum vita or resume, a copy of the most recent transcript, a code sample or site URL for which the applicant had primary responsibility, and names of two professional or academic references whom we may contact; consideration will begin Monday 18 August 2008 with a starting date in early autumn 2008. Salaries and benefits at NWRA are very competitive, and the work environment is flexible, similar to an academic institution. For further questions, please contact Dr. Leka at leka"at"cora.nwra.com. Applications should be sent by email or by post to Dr. K. D. Leka, NWRA/CoRA Div., 3380 Mitchell Ln., Boulder, CO 80301 (no phone calls please). NWRA encourages applications from women and minorities, and is an Equal Opportunity Employer M/F/V/D.

Job Openings

Postdoctoral Position

Big Bear Solar Observatory (USA)

Big Bear Solar Observatory is bringing on line its 1.6 m clear aperture solar telescope this summer, and high resolution, adaptive optically corrected photometric and polarimetric data will begin to flow. We seek a Postodoctoral Associate who will be able to take advantage of the unique scientific opportunities that these data will allow. Research may be done in collaboration with scientists in Big Bear. Please send applications to Phil Goode (pgoode@bbso.njit.edu). Search will begin August 2008 and continue until position is filled. BBSO/NJIT is committed to equal opportunity through affirmative action in employment and we are especially eager to identify minority persons and women with appropriate qualifications.

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 monthly call for abstracts will be issued and abstracts received by the last day of the month will usually appear in the following month's newsletter. 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.***