// COOLNEWS

A RESEARCH NEWSLETTER DEDICATED TO COOL STARS AND THE SUN

No. 47 — November 1999 Editor: Steve Skinner (coolnews@jila.colorado.edu)

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Stellar Abstracts

Chromospheric imaging of the active binary system V 711 Tau = HR 1099 in December 1992

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Spectroscopic observations of the bright RS CVn-type system V 711 Tau = HR 1099 (K1 IV + G5 V) were obtained by IUE during the same period of a Multi-Site Continuous Spectroscopy (MUSICOS) campaign between 12 -18 December 1992 (Huang et al. 1995).

We report on the results of a "Doppler Imaging" analysis of the Mg II h line. Broad, variable and extended wings have been detected and successfully fitted using a broad Gaussian, which accounts for a large fraction of flux from the global stellar Mg II h emission. This broad component is present in all spectra and presents velocity shifts with respect to the K1 star rest-frame that are variable in the range between -19 and +44 km s^{-1}. Similar results have been obtained from Doppler Imaging of the other relevant chromospheric line (H_α) in other RS CVn stars (c.f. Hatzes, 1995 and Hatzes, 1998). Furthermore, our analysis suggests that these shifts could be due to rotational modulation produced by an active region, that essentially straddles the pole of the K1 star in which down-flows dominate on up-flows. Finally, emitting matter between the two stars has been detected, indicating that mass-exchange is present in the binary system.

Five flare episodes with strong flux enhancements in several transition region lines were observed. These flares were preliminarily reported by Neff et al. (1995). We analyse in this paper the Mg II h and k line emission during the major of these five flare (1992 December 14), since only a weak enhancement was observed in the Mg II h and k lines during the other four flares.

Spectral imaging of the Mg II lines during this flare indicates a flaring site on the visible K1 star hemisphere with mass ejection from the K1 star towards the G5 companion. The Mg II emission shows a large broadening with FWHM reaching 1000 km s^{-1} at flare peak and decreasing to 700 km s^{-1} two hours after the peak.

Our analysis has been carried out using both IUESIPS and NEWSIPS processed spectra. We find that the shapes of the spectral profiles are quite different when spectra are processed by IUESIPS or NEWSIPS procedures, the IUESIPS processed spectra showing a spurious excess of flux on the red wing of the lines.

A comparison with results from GHRS-HST Mg II spectra of V 711 Tau (Dempsey et al. 1996, Wood et al. 1996) shows that, thanks to the complete phase coverage together with the improved quality obtained by the NEWSIPS reduction procedures, the bulk of information derived from GHRS data can be extracted also from the IUE spectra, which continues to be the most complete UV data set that is nowadays available on this source.

Accepted by A&A

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Irregular Variables of Type Lb. Energy Distributions and Stellar Parameters

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AGB variables of types Lb, SRa, SRb, and Mira are studied by fitting combinations of blackbodies to visual, near infrared and IRAS data. This paper supplements an earlier work dealing with a smaller sample of SRa and SRb variables. The fitted parameters T^{*}, $T^{\rm d}$ and R^{d}/R^{*} are related to physically meaningful quantities. Also, quantities derived from the fits like the ratio of the luminosities of the two fitted blackbodies are confronted with independent mass-loss estimators.

For the O-rich Lb variables all of the 'blue' objects can be reasonably well approximated by only one blackbody whereas the 'red' ones need two. Among the 'blue' objects a significant fraction seem to be not on the AGB at all but a kind of 'RGB pollution'. The T^{*} values, reflecting mainly offseted ($-500\,$K) effective temperatures for objects with small to moderate mass-loss, are significantly higher in the 'blue' cases.

Carbon-rich objects differ significantly from the O-rich ones in their fit parameters. Sometimes 'unphysically' low T^{*} are found – a result of circumstellar reddening in the high mass-loss cases. Furthermore lower values of $T^{\rm d}$, accompanied by normal T^{*}s and large shell radii are common and can be related to the phenomenon of detached shells. S-stars populate a similar region to the optically thin carbon stars in their fit properties.

Accepted by A&A

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Catalogue and Bibliography of the UV Cet-type Flare Stars and Related Objects in the Solar Vicinity

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This new catalogue of flare stars includes 463 objects. It contains astrometric, spectral and photometric data as well as information on the infrared, radio and X–ray properties and general stellar parameters. From the total reference list of about 3400 articles, partial lists selected by objects, authors, key words and by any pairs of these criteria can be obtained. Tables 1 and 3 (of 3) are only available in electronic form at the CDS via anonymous ftp to
cdsarc.u-strasbg.fr (130.79.128.5) or via
http://cdsweb.u-strasbg.fr/Abstract.html

Accepted by A&AS

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The Effects of Opacity in the Transition Region of YZ CMi

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It has generally been assumed that the emission from the upper atmosphere of late-type stars is optically thin. In the present paper we use the Si IV and C IV resonance lines to investigate this assumption for the active dMe star YZ CMi. The significant deviations of the line ratios from their optically thin values, demonstrate that opacity can be quite important particularly in the case of stellar flares. These deviations are combined with a method of escape probabilities to derive optical depths of approximately unity for the lines under consideration. We demonstrate that, if the electron density in the atmosphere is known, opacity can provide important information on the linear dimensions of the scattering layer. Using this technique, we have estimated path lengths of a few kilometers for one of the flares under consideration.

Accepted by A&A Letters

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Photometric and Ca II H and K Spectroscopic Variations in Nearby Sun-Like Stars with Planets III

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We present results of the analysis of time-series photometry, Ca II H and K spectrophotometry, and high-dispersion visible spectra of nine nearby Sun-like stars recently identified as having planets. For the six stars whose presumed planets have orbital periods less than four months (τ Boo, 51 Peg, υ And, ρ^1 Cnc, ρ CrB, and 70 Vir), sine-curve fits to the photometric data show no variations with semi-amplitude greater than one or two parts in 10^4. Non-variability at this level of precision is sufficient to rule out surface magnetic activity as the cause of the observed radial velocity variations in these seven stars and makes non-radial pulsations unlikely as well. Thus, our photometry provides indirect but strong support for true reflex motions — planets — in these stars. We have also used our photometric fluxes to search for possible transits of the extrasolar planets. Transits definitely do not occur in τ Boo, 51 Peg, υ And, and ρ^1 Cnc and probably do not occur in ρ CrB and 70 Vir. The precision of our photometry is sufficient to detect transits of planets even if they are not gas giants, as currently assumed, but much smaller objects with rocky compositions. The chance of finding at least one transit in this sample of stars is $\sim 40\%$. Except for 47 UMa, intraseasonal variability in Ca II flux consistent with rotation was detected in the records of all stars. Ages have been estimated from the mean Ca II flux and, where possible, the rotation period.

Accepted by ApJ

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Gravity Dependence at the Bottom of the Main Sequence

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We investigate the effects of gravity on the infrared spectra of objects around the M dwarf to brown dwarf transition. We focus on observations of the very low-mass objects TVLM 513–46546 and GJ 569B from 1 to 2.5 μm. These objects have very similar spectral types and colours but they differ by more than a magnitude in luminosity; this indicates that their surface gravities differ by around 0.5 dex. We compare their spectra and present line identifications in the infrared. We investigate at low resolution the sensitivity of some of the atomic features to changes in surface gravities and make comparisons with recent atmospheric models. We identify seven surface gravity sensitive features. We find that the difference in surface gravity between the spectra are consistent with GJ 569B having a lower surface gravity than TVLM by at least 0.5 dex which suggests GJ 569B is a brown dwarf. Because of the relatively few surface gravity features which can be identified at low resolution, confirmation of this result should be made with observations at higher resolution which would enable more gravity sensitive features to be identified with better precision.

Accepted by A&A

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Magnetic Field Variations with a Rotational Period on a Solarlike Star ξ Boo A

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We examine the global configuration of the magnetic field of the active dwarf ξ Boo A as a function of stellar rotation phase (P = $6.^{d}1455 \pm 0.0003$ days) using direct high-precision spectropolarimetric measurements. The magnetic field varies from −10 G up to +30 G. Integrated magnetic flux on the surface changes polarity during a single rotation period on ξ Boo A, resulting in a flux ratio of: $\Delta\Phi_{+}/\Delta\Phi_{-} \sim 1.5$. This is the first study of the general magnetic field as a function of rotation on a solarlike star other than the Sun.

Accepted by ApJ

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On the Origin of the 13 μm Feature. A study of ISO-SWS Spectra of Oxygen-rich AGB Stars

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We have derived a mean profile of the 13 μm emission feature from 11 ISO spectra of oxygen-rich AGB stars and present an overview of the mineral species that could account for it. Our results can be summarized as follows: i) Spherical particles of α-Al_2O_3 (corundum) have a sharp emissivity maximum peaking at 12.7 μm. The difference of 0.3 μm in the peak position compared to the mean observed band profile is a serious obstacle to assigning the 13 μm dust feature to this dust species. ii) From a continuous distribution of ellipsoidal α-Al_2O_3-particles, a broad emissivity profile peaking at 13 − 14 μm emerges. It is difficult to reconcile the large width of this profile with the width of the observed 13 μm band. iii) The most prominent emissivity maximum of TiO_2 (rutile) is located at 13.5 μm; its width is larger and its strength three times smaller than the emissivity maximum of corundum. iv) Core-mantle-grains composed of rutile and corundum or of corundum and amorphous olivine can both produce, in a certain domain of core volume fractions, a spectral signature very similar to the observed 13 μm feature. However, the necessity to assume rather artificial distribution functions of the core volume fractions makes this scenario improbable. v) We consider $MgAl_2O_4$ (spinel) to be the most promising candidate for the carrier of the 13 μm feature since its emissivity peaks are located at 12.95 μm and at 16.8 μm for spherical particles and since at *both* positions features are present in most of the spectra of our sample. In view of the relevance of this substance for circumstellar shells, laboratory spectra of spinel particles embedded in KBr are also presented.

Accepted by A&A

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A Systematic Analysis of X-ray Variability of dM Stars

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We have systematically analyzed X-ray variability of dM stars. Our data base is the sample of all dM stars listed in the CNS3 (Gliese & Jahreiβ 1991) catalog which have been observed with the ROSAT PSPC.

Our data sample includes 86 pointed observations of 55 distinct stars or multiple systems. A large fraction of stars shows significant variations, regardless of their quiescent flux. Variability is detected on all observable time scales. The amplitudes of these variations are independent of both stellar X-ray and visual luminosity. Compared to solar X-ray variability properties our results suggest that the amplitude distribution of X-ray variability in dM stars is consistent

with the analogous distribution for solar flares.

We discuss the effect of variability on the spread observed in the X-ray luminosity function of M stars. The comparison of our data with those obtained with *Einstein IPC* shows that variations on time scales shorter than a few month are more common than long term variations comparable to, e.g., the 11 years solar cycle.

Accepted by A&A

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Distribution Of Starspots On Cool Stars

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We study the dynamics of magnetic flux tubes in young stars with masses between 0.4 $M_\odot$ and 1.7 $M_\odot$ and for rotation rates between 0.25 $\Omega_\odot$ and 63 $\Omega_\odot$. The resulting latitudinal emergence patterns at the stellar surface are compared with observed distributions of starspots in stellar latitude. The stellar models considered cover the range of evolutionary stages from shortly after the Hayashi phase down to the ZAMS, i.e. from the classical and weak-line T Tauri stars to the α-Persei stars. We use numerical simulations to follow the evolution of magnetic flux tubes from their origin at the bottom of the convection zone up to near-surface layers. We find a strong increase of emergence latitude with increasing rotation rate, a moderate decrease with increasing stellar mass, and a stronger decrease with stellar age. At very early evolutionary stages, when the central radiative zone is still quite small, we find magnetic flux emergence both in low latitudes as well as in the polar areas. High-latitude emergence is predicted in slightly more evolved pre-main-sequence and young main-sequence stars, but truly polar spots on these stars require an additional transport mechanism acting after magnetic flux emergence at the surface, probably meridional circulation or poleward slip of the 'anchored' part of the erupted flux tubes. We discuss our findings in the light of the results obtained from Doppler-imaging studies.

Accepted by A&A

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Optical and Near-infrared Spectrophotometric Properties of Long Period Variables and Other Luminous Red Stars

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Based on a new and large sample of optical and near-infrared spectra obtained at the Mount Stromlo and Siding Spring Observatories (Lançon & Wood 1998; Lançon & Wood, in preparation), spectrophotometric properties of cool oxygen- and carbon-rich Long Period Variables and supergiants are presented. Temperatures of oxygen-rich stars are assigned by comparison with synthetic spectra computed from up-to-date oxygen-rich model atmosphere grids. The existence of reliable optical and near-infrared temperature indicators is investigated. A narrow relation between the bolometric correction BC_I and the broad-band colour I−J is obtained for oxygen-rich cool stars. The ability of specific near-infrared indices to separate luminosity classes, atmospheric chemistry or variability subtypes is discussed. Some comments are also given on extinction effects, water band strengths in Long Period Variables and the evaluation of $^{12}CO/^{13}CO$ ratio in red giants.

Accepted by A&A

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The Lithium-Rotation Correlation in the Pleiades Revisited

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The dispersion in lithium abundance at fixed effective temperature in young cool stars like the Pleiades has proved a difficult challenge for stellar evolution theory. We propose that Li abundances relative to a mean temperature trend, rather than the absolute abundances, should be used to analyze the spread in abundance. We present evidence that the dispersion in Li equivalent widths at fixed color in cool single Pleiades stars is at least partially caused by stellar atmosphere effects (most likely departures from ionization predictions of model *photospheres*) rather than being completely explained by genuine abundance differences. We find that effective temperature estimates from different colors yield systematically different values for active stars. There is also a strong correlation between stellar activity and Li excess, but not a one-to-one mapping between unprojected stellar rotation (from photometric periods) and Li excess. Thus, it is unlikely that rotation is the main cause for the dispersion in the Li abundances. Finally, there is a strong correlation between detrended Li excess and potassium excess but not calcium– perhaps supporting incomplete radiative transfer calculations (and overionization effects in particular) as an important source of the Li scatter. Other mechanisms, such as very small metallicity variations and magnetic fields, which influence PMS Li burning may also play a role. Finally, we find no statistical evidence for a decrease in dispersion in the coolest Pleiades stars, contrary to some previous work.

Accepted by AJ

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Solar Abstracts

Extended Cellular Automaton Models of Solar Flare Occurrence

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In a previous study, we proposed a class of stochastic cellular automaton models for the occurrence of solar flares. ‘Flaring elements’ of a deliberately unspecified nature were allowed to interact. Investigation of a 1-D version of the model, capable of analytical description, conflicted in detail with observations but indicated the qualitative success of such a picture. In this extended study, we investigate the consequences of relaxing various assumptions present in the initial study. In this way we can build up a family of models each producing a better match with the observations. From these results we can say which features control the power-law indices obtained from self-organising models of flare occurrence. The sorts of constraints this type of modelling produces will also have to be satisfied by more physically detailed pictures.

Accepted by A&A

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Non-Uniqueness of Atmospheric Modeling

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We focus on the deceptively simple question: How can we use the emitted photons to extract meaningful information on the transition region and corona? Using examples, we conclude that the only safe way to proceed is through forward models. In this way, inherent non-uniqueness is handled by adding information through explicit physical assumptions and restrictions made in the modeling procedure. The alternative, "inverse" approaches, including (as a restricted subset) many standard "spectral diagnostic techniques", rely on more subjective choices that have, as yet, no clear theoretical support. Emphasis is on the solar transition region, but necessarily discussing the corona, and with implications for more general problems concerning the use of photons to diagnose plasma conditions.

Accepted by Solar Physics

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The CO fundamental Vibration-Rotation Lines in the Solar Spectrum: I. Imaging Spectroscopy and Multi-dimensional LTE Modeling

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Spectroscopic imaging observations of the CO fundamental vibration-rotation transitions at 4.6 μm, obtained at the Kitt Peak McMath-Pierce facility, show that the dynamics of both the solar granulation and, to a lesser extent, the five-minute oscillations play an important role in CO line formation. Spectro-heliograms made in the cores of strong CO lines display an inverted granular contrast with dark areas corresponding to granule centers, and a bright network corresponding to the inter-granular lanes. This observation is confirmed by multi-dimensional radiative transfer modeling of CO line formation in a solar convection-simulation snapshot. Unfortunately, current granulation simulations do not extend to high enough layers in the atmosphere to model formation of CO lines into the chromosphere and close to the solar limb where they exhibit their anomalous temperature behavior.

The presented transfer calculations facilitate the interpretation of the observed pattern, predicting that the darkest CO line cores at disk center are associated with the strong adiabatic expansion and cooling that occurs over granule centers when warm up-flowing material runs into the steep density gradient of the stable layer above the photosphere. The calculated granulation intensity contrast in the CO line cores is considerably higher than observed, and the calculated spatially averaged line profiles at disk center are deeper than the observed ones. It is speculated that both discrepancies result from the assumption of instantaneous chemical equilibrium which may not be valid in the convective flows. If the CO concentration in the hot convective upflow cannot increase fast enough to adjust to the lower temperatures in the radiatively cooled layer above the photosphere, CO lines would form deeper in the atmosphere, have higher core intensities and show less contrast, more in agreement with observations.

Accepted by ApJ

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New Insight Into Transition Region Dynamics via SUMER Observations and Numerical Modelling

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We explore the idea that the occurrence of nano-flares in a magnetic loop around the O VI formation temperature could explain the observed red-shift of mid-low transition region lines as well as the blue-shift observed in low coronal lines ($T > 6\ 10^5$ K). Observations are compared to numerical simulations of the response of the solar atmosphere to an energy perturbation of 4 10^{24} erg representing an energy release during magnetic reconnection in a 1-D semi-circular flux tube. The temporal evolution of the thermodynamic state of the loop is converted into C IV 1548, O VI 1032 and Ne VIII 770 line profiles in non-equilibrium ionization. Performing an integration over the entire period of simulations, a redshift of ~ 6 km s^{-1} is found in C IV, while a blue-shift of ~ 2 km s^{-1} and ~ 10 km s^{-1} were derived for O VI and Ne VIII, respectively, in reasonable agreement with observations.

Accepted by A&A

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Small-scale Topology of Solar Atmosphere Dynamics IV. On the Relation of Photospheric Oscillations to Meso-scale Flows

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We use a high quality five-hour sequence of images of the solar photosphere taken at the Swedish Solar Vacuum Telescope, La Palma, to study the relation of meso-scale divergence with the amplitudes of photospheric intensity oscillations. Meso-scale flows are determined by local correlation tracking of the granulation. Statistical evaluation of the co-location probability of regions with more than twice the average oscillation amplitude and regions with high or low meso-scale divergence shows that high amplitude regions are preferentially located in regions of negative divergence (convergence) and avoid meso-divergent regions. Additionally we confirm the increase of granule brightness in regions of positive divergence with the opposite effect in regions of convergence.

Accepted by A&A

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Electron Firehose Instability and Acceleration of Electrons in Solar Flares

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An electron distribution with a temperature anisotropy $T_{\|}/T_{\perp} > 1$ can lead to the Electron Firehose instability (Here $\|$ and $\perp$ denote directions relative to the background magnetic field $\mathbf{B}_0$). Since possible particle acceleration mechanisms in solar flares exhibit a preference of energizing particles in parallel direction, such an anisotropy is expected during the impulsive phase of a flare. The properties of the excited waves and the thresholds for instability are investigated by using linearized kinetic theory. These thresholds were connected to the pre-flare plasma parameters by assuming an acceleration model acting exclusively in parallel direction. For usually assumed pre-flare plasma conditions the electrons become unstable during the acceleration process and lefthand circularly polarized waves with frequencies of about $\sim |\Omega_p|$ are excited at parallel propagation. Indications have been found, that the largest growth rates occur at oblique propagation and the according frequencies lie well above the proton gyrofrequency.

Accepted by A&A

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On the Sunspot Transition Region

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The EUV line emission and relative line-of-sight velocity in the transition region between the chromosphere and corona of 36 sunspot regions are investigated, based on observations with the Coronal Diagnostic Spectrometer - CDS and the Solar Ultraviolet Measurements of Emitted Radiation - SUMER on the Solar and Heliospheric Observatory - SOHO. The most prominent features in the transition region intensity maps are the sunspot plumes. In the temperature range

between log $T = 5.2$ and log $T = 5.6$ we find that 29 of the 36 sunspots contain one or two sunspot plumes. The relative line-of-sight velocity in sunspot plumes is high and directed into the Sun in the transition region, for 19 of the sunspots the maximum velocity exceeds 25 km s^{-1}. The velocity increases with increasing temperature, reaches a maximum close to log $T = 5.5$ and then decreases abruptly.

Attention is given to the properties of oscillations with a period of 3 minutes in the sunspot transition region, based on observations of six sunspots. Comparing loci with the same phase we find that the 3 minute oscillations affect the entire umbral transition region and part of the penumbral transition region. Above the umbra the observed relation between the oscillations in peak line intensity and line-of-sight velocity is compatible with the hypothesis that the oscillations are caused by upward-propagating acoustic waves. Information about intensity oscillations in the low corona is obtained from observations of one sunspot in the 171 Å channel with the Transition Region And Coronal Explorer - TRACE. We conclude that we observe the 3 minute sunspot oscillations in the chromosphere, the transition region and the low corona. The oscillations are observable over a wider temperature range than the sunspot plumes, and show a different spatial distribution than that of the plumes.

Accepted by Solar Physics

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Are Heating Events in the Quiet Solar Corona Small Flares? Multiwavelength Observations of Individual Events

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Temporary enhancements of the coronal emission measure in a quiet region have been shown to constitute a significant energy input. Here some relatively large events are studied for simultaneous brightenings in transition region lines and in radio emission. Associated emissions are discussed and tested for characteristics known from full-sized impulsive flares in active regions. Heating events and flares are found to have many properties in common, including *(i)* associated polarized radio emission, which usually precedes the emission measure peak (Neupert effect) and sometimes has a non-thermal spectrum, and *(ii)* associated and often preceding peaks in O V and He I emission. On the other hand, heating events also differ from impulsive flares: *(i)* In half of the cases, their radio emission at centimeter waves shows a spectrum consistent with thermal radiation, *(ii)* the ratio of the gyro-synchrotron emission to the estimated thermal soft X-ray emission is smaller than in flares, and *(iii)* the associated emission in the O V transition region line shows red shifts and blue shifts, indicating upflows in the rise phase and downflows in the decay phase, respectively. Nevertheless, the differences seem to be mainly quantitative, and the analyzed heating events with thermal energies around 10^{26}erg may in principle be considered as microflares or large nanoflares, thus small versions of regular flares.

Accepted by Solar Physics

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Bidirectional Type III Solar Radio Bursts

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Bidirectional coronal type III bursts are modeled by combining a model of coronal electron heating and beam generation via time-of-flight effects with semiquantitative estimates of quasilinear relaxation. Electromagnetic emissivities are estimated by extending the recently developed theory of interplanetary type III bursts to coronal emissions, including its features of stochastic Langmuir-wave growth and three-wave interactions. The results are investigated for heating on open and closed coronal field lines and are compared with observations of normal, reverse-slope, bidirectional, and inverted-J and -U coronal type III radio bursts. Harmonic emission is predicted to dominate at plasma frequencies above roughly 100 MHz where the efficiency of fundamental emission falls off steeply, while its free-free reabsorption rises. The model also explains the observed trends in the likelihood of occurrence of normal, reverse-slope, and bidirectional coronal type III bursts.

Accepted by Solar Physics

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Brown Dwarf Abstracts

The Density of Methane Brown Dwarfs: Observational and Theoretical Constraints

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Methane brown dwarfs (CH_4BDs), i.e. objects similar to the low mass star Gliese 229B, are characterized by very unusual colours: J–K$\lesssim$0 and I–J$\gtrsim$5. An analysis of the ESO public images, which cover an area of 37 sq. arcmin in the three filters, yields one clear CH_4BD candidate with J=20.2 and two fainter sources with J$\simeq$23. The resulting observed density of methane dwarfs ranges from $\approx$100 to $\approx$500 objects per sq. degree with J<23.1, quite high but compatible, within the errors, with what we derive from simulations of the stellar population of brown dwarfs in the disk of the Galaxy adopting reasonable (although still speculative) hypotheses on the evolution of BD colours with cooling. The predictions presented here can be useful in constraining the results from future searches of these objects in the infrared. Deep imaging of several sq. degrees of sky down to J$\simeq$22, K$\simeq$22 and I$\gtrsim$27 are necessary to significantly improve the observational database.

Accepted by A&A

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New Planets

A Planet Orbiting the Star Gliese 86

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A 4 M_J planet with a 15.8 day orbital period has been detected from very precise radial velocity measurements with the CORALIE echelle spectrograph. A second remote and more massive companion has also been detected.
All the planetary companions so far detected in orbit closer than 0.08 AU have a parent star with a statistically higher metal content compared to the metallicity distribution of other stars with planets. Different processes occuring during their formation may provide a possible explanation for this observation.

Accepted by A&A

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UPCOMING MEETING

SECOND ANNOUNCEMENT

The Third MONS Workshop: Science Preparation and Target Selection

24 - 26 January 2000

Theoretical Astrophysics Center
Aarhus University, Denmark

(**** NOTE: Change of date from First Announcement. ****)

MONS is a proposed space mission to study stellar oscillations. It will measure oscillations in about 25 nearby stars by monitoring the brightness and colour fluctuations in each star for about one month. Two Star Trackers will serve as secondary scientific instruments, providing photometry for about 10000 stars over the mission.

Following the positive recommendation concerning the MONS project (as a single mission or as a combined MONS/Ballerina mission) to be launched in 2003, we now invite all those interested in joining the MONS Science Consortium to the Third MONS workshop.

The aim of this Third MONS workshop is to discuss science preparation and target selection for the MONS mission including aspects of ground-based observations, theoretical models, data simulation and data distribution.

MONS Web site: `http://www.obs.aau.dk/MONS/`

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, or M) 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 .`