# *COOLNEWS*

**A RESEARCH NEWSLETTER DEDICATED TO COOL STARS AND THE SUN**

No. 98 — April 2004 Editor: Steve Skinner (coolnews@jila.colorado.edu)


TABLE OF CONTENTS



## *Stellar Abstracts*

### A Sub-Millimeter Search of Nearby Young Stars for Cold Dust: Discovery of Debris Disks around Two Low-Mass Stars


**Michael C. Liu,[1] Brenda C. Matthews,[2] Jonathan P. Williams,[1] and Paul G. Kalas[2]**

[1] Institute for Astronomy, University of Hawai'i, 2680 Woodlawn Drive, Honolulu, HI 96822
[2] Astronomy Department, University of California, Berkeley, CA 94720



We present results from a JCMT/SCUBA 850 $\mu$m search for cold dust around eight nearby young stars belonging to the $\beta$ Pic ($t \approx 12$ Myr) and the Local Association ($t \approx 50$ Myr) moving groups. Unlike most past sub-mm studies, our sample was chosen solely on the basis of stellar age. Our observations achieve about an order of magnitude greater sensitivity in dust mass compared to previous work in this age range. We detected two of the three M dwarfs in our sample at 850 $\mu$m, GJ 182 and GJ 803 ($M_\star \approx 0.5$ M$_\odot$), with inferred dust masses of only $\approx$0.01–0.03 $M_\oplus$. GJ 182 may also possess a 25 $\mu$m excess, indicative of warm dust in the inner few AU of its disk. For GJ 803 (AU Mic; HD 197481), sub-mm mapping finds that the 850 $\mu$m emission is unresolved. A non-detection of the CO 3–2 line indicates the system is gas-poor, and the spectral energy distribution suggests the presence of a large inner disk hole ($\approx$17 AU = 1.7$''$ in radius for blackbody grains). These are possible indications that planets at large separations can form around M dwarfs within $\sim$10 Myr. In a companion paper (Kalas, Liu & Matthews 2004), we confirm the existence of a dust disk around GJ 803 using optical coronagraphic imaging. Given its youthfulness, proximity, and detectability, the GJ 803 disk will be a valuable system for studying disk, and perhaps planet, formation in great detail. Overall, sub-mm measurements of debris disks point to a drop in dust mass by a factor of $\sim 10^3$ within the first $\sim$10 Myr, with the subsequent decline in the masses of sub-mm detected disks consistent with $t^{-0.5}$ to $t^{-1}$.



Accepted by ApJ

*For preprints contact*: mliu@ifa.hawaii.edu

*For preprints via ftp or WWW*: http://arXiv.org/abs/astro-ph/0403131

## Discovery of a Large Dust Disk Around the Nearby Star AU Microscopium

**Paul Kalas[1,2], Michael C. Liu[3] and Brenda C. Matthews[1]**

[1] Astronomy Department and Radio Astronomy Laboratory, 601 Campbell Hall, Berkeley, CA 94720
[2] National Science Foundation Center for Adaptive Optics, University of California, Santa Cruz, CA 95064
[3] Institute for Astronomy, 2680 Woodlawn Dr., Honolulu, HI 96822

We present the discovery of a circumstellar dust disk surrounding AU Microscopium (AU Mic, GJ 803, HD 197481). This young M star at 10 parsec has the same age and origin as $\beta$ Pictoris, another nearby star surrounded by a dust disk. The AU Mic disk is detected between 50 AU and 210 AU radius, a region where dust lifetimes exceed the present stellar age. Thus, AU Mic is the nearest star where we directly observe the solid material required for planet formation. Since 85% of stars are M-type, the AU Mic disk provides new clues on how the majority of planetary systems might form and evolve.

Published online in *Science Express* (26 Feb. 2004)
To appear in print in *Science* (2004)

*For preprints contact*: kalas@astro.berkeley.edu

## XMM-Newton Observation of the Young Open Cluster Blanco 1. I. X-ray Spectroscopy and Photometry.

**I. Pillitteri[1], G. Micela[2], S. Sciortino[2], F. Damiani[2] and F. R. Harnden Jr.[3]**

[1] Dip. Scienze Fisiche e Astronomiche, Università di Palermo; Piazza del Parlamento 1, 90134 Palermo, Italy
[2] INAF - Osservatorio Astronomico di Palermo; Piazza del Parlamento 1, 90134 Palermo, Italy
[3] Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138

We present an X-ray study of the high metallicity young open cluster Blanco 1 based on *XMM–Newton* data. X-ray spectroscopy of cluster members is presented for the first time as well as new X-ray distribution functions of late-type stars. We detected all known dF and dG stars in the EPIC field and 80% and 90% of dK and dM stars, respectively. The X-ray spectral analysis of the X-ray brightest cluster stars and X-ray color analysis of a larger sample show that a model with two temperatures (at about 0.3 and 1 keV) explains the quiescent activity phase spectra.
We discuss also the nature of unidentified X-ray sources in the observed region and their X-ray spectral properties.

Accepted by A&A
*For preprints contact*: pilli@astropa.unipa.it
*For preprints via ftp or WWW*: http://www.astropa.unipa.it/Library/preprint.html

## Photospheric Magnetic Field and Surface Differential Rotation of the FK Com star HD 199178

**P. Petit[1,2], J.-F. Donati[2], J.M. Oliveira[3], M. Aurière[2], S. Bagnulo[4], J.D Landstreet[5], F. Lignières[2], T. Lüftinger[6], S. Marsden[2], D. Mouillet[2], F. Paletou[2], S Strasser[7], N. Toqué[2], G.A. Wade[8]**

[1] Centro de Astrofisica da Universidade do Porto, rua das Estrelas, 4150-762 Porto, Portugal
[2] Laboratoire d'Astrophysique, Observatoire Midi-Pyrénées, 14 Av. E. Belin, F–31400 Toulouse, France
[3] School of chemistry and Physics, Keele University, Staffordshire ST5 5BG, UK
[4] European Southern Observatory, Alonso de Cordova 3107, Vitacura, Santiago, Chile
[5] Department of Physics and Astronomy, The University of Western Ontario, London, Ontario, Canada, N6G 3K7
[6] Institut für Astronomie, Tuerkenschanzstrasse 17, A-1180 Wien, Austria
[7] Department of Physics and Astronomy, University of Calgary, Calgary, AB T2N 1N4, Canada
[8] Royal Military College of Canada, Department of Physics, P.O. Box 17000, Station "Forces", Kingston, Ontario, Canada, K7K 4B4

We present spectropolarimetric observations of the FK Com star HD 199178 obtained between 1998 December and 2003 August at the Télescope Bernard Lyot (Observatoire du Pic du Midi, France). We report the detection of a photospheric magnetic field and reconstruct its distribution by means of Zeeman-Doppler Imaging. We observe large regions where the magnetic field is mainly azimuthal, suggesting that the dynamo processes generating the magnetic activity of HD 199178 may be active very close to the stellar surface. We investigate the rapid evolution of surface brightness and magnetic structures from a continuous monitoring of the star over several weeks in 2002 and 2003. We report that significant changes occur in the distribution of cool spots and magnetic regions on typical timescales of the order of 2 weeks. Our spectropolarimetric observations also suggest that the surface of HD 199178 is sheared by differential rotation, with a difference in rotation rate between equatorial and polar regions of the order of 1.5 times that of the Sun.

Accepted by MNRAS

*For preprints contact*: petit@astro.up.pt

*For preprints via ftp or WWW*: ftp://ftp.astro.up.pt/pub/preprints/157.ps.gz

### Properties of Longitudinal Flux Tube Waves. II. Limiting Shock Strength Behavior

**Manfred Cuntz**[1,2]

[1] Department of Physics, Science Hall, University of Texas at Arlington (UTA), Arlington, TX 76019-0059, USA
[2] Institute for Theoretical Astrophysics, University of Heidelberg, Tiergartenstraße 13, D-69121 Heidelberg, Germany

We extend our previous work on analytic evaluations of properties of longitudinal tube waves to waves propagating in gravitational atmospheres. We derive an expression for the limiting shock strength and discuss the behavior of the shock strength in tubes of different geometry. It is found that a height-independent value for the limiting strength is attained for constant cross-section tubes and exponential tubes, whereas for wine-glass tubes the limiting shock strength increases with height due to the increase of the tube cross section. The limiting shock strength is well reproduced by time-dependent simulations. The derived limiting shock strength as well as the energy dissipation rate of the waves show significant similarities to acoustic waves. The limiting shock strength allows to estimate the heating potential of waves in the absence of detailed time-dependent computations.

Accepted by A&A

*For preprints contact*: cuntz@uta.edu

## *Solar Abstracts*

### Periodic Oscillations in the North-South Asymmetry of the Solar Magnetic Field

**R. Knaack**[1], **J.O. Stenflo**[1,2] **and S.V. Berdyugina**[1,3]

[1] Institute of Astronomy, ETH-Zentrum, CH-8092 Zürich, Switzerland
[2] Faculty of Mathematics and Science, University of Zurich, CH-8057 Zürich, Switzerland
[3] Astronomy Division, PO Box 3000, 90014 University of Oulu, Finland

We report on significant periodic variations of the magnetic activity between the north and south hemisphere of the Sun. For this purpose, we have investigated the north-south asymmetry of two solar data sets, namely the Kitt Peak synoptic Carrington rotation maps of the photospheric magnetic field (1975–2003) and monthly averaged sunspot areas (1874–2003). Using Fourier and wavelet analysis, we have found a regular pattern of pronounced oscillations with periods of $1.50 \pm 0.04\,\mathrm{yr}$, $1.79 \pm 0.06\,\mathrm{yr}$ and $3.6 \pm 0.3\,\mathrm{yr}$ in the magnetic flux asymmetry. The former two periods are related to a process which leads to a gradual shift in the excess magnetic flux from north to south or vice versa. Additional periods of $43.4 \pm 7.1\,\mathrm{yr}$ (twice the magnetic cycle) and $320 - 329\,\mathrm{days}$ were detected in the sunspot asymmetry.

Accepted by A&A Letters

*For preprints contact*: rknaack@astro.phys.ethz.ch

### Oscillations in the Umbral Atmosphere

**N. Brynildsen**[1], **P. Maltby**[1], **C. R. Foley**[2], **T. Fredvik**[1], **and O. Kjeldseth-Moe**[1]

[1] Institute of Theoretical Astrophysics, University of Oslo, P.O. Box 1029 Blindern, 0315 Oslo, Norway
[2] Mullard Space Science Laboratory, Department of Space and Climate Physics, Holmbury St Mary, Dorking, Surrey, RH5 6NT, UK

The results of simultaneous observations of oscillations in the chromosphere, transition region, and corona above nine sunspots are presented. The data are obtained through coordinated observing with the Solar and Heliospheric Observatory - SOHO and the Transition Region And Coronal Explorer - TRACE. Oscillations are detected above each umbra. The power spectra show one dominant frequency corresponding to a period close to 3 min. We show that the oscillations in the sunspot transition region can be modeled by upwardly propagating acoustic waves. In the corona the oscillations are limited to small regions that often coincide with the endpoints of sunspot coronal loops. Spectral observations show that oscillations in the corona contribute to the observed oscillations in the TRACE 171 Å channel observations. We show that a recent suggestion regarding a connection between sunspot plumes and 3 min oscillations conflicts with the observations.

Accepted by Solar Physics

*For preprints contact*: per.maltby@astro.uio.no

## Signature of Oscillations in Coronal Bright Points

**J.G. Doyle**[1], **I.I. Roussev**[2] **and M.S. Madjarska**[3]

[1] Armagh Observatory, College Hill, Armagh BT61 9DG, N. Ireland
[2] Center for Space Environment Modeling, University of Michigan, 2455 Hayward St, Ann Arbor, MI 48109, USA
[3] Mullard Space Science Laboratory, UCL, Holmbury St. Mary, Dorking, Surrey, RH5 6NT, UK

We present, for the first time, blinker phenomena being associated with brightenings in pre-existing coronal loops registered by the Extreme-ultraviolet Imaging Telescope (EIT) in Fe XII 195 Å. The brightenings occur during the emergence of new magnetic flux as registered by the Big Bear Solar Observatory (BBSO) magnetograph. The blinkers were identified using simultaneous observations obtained with the Coronal Diagnostic Spectrometer (CDS) and Solar Ultraviolet Measurements of Emitted Radiation (SUMER) spectrograph. In light of the new observational results, we present one possible theoretical interpretation of the blinker phenomenon. We suggest that the blinker activity we observe is triggered by interchange reconnection, serving to provide topological connectivity between newly emerging flux and pre-existing flux. The EIT images show the existence of loop structures prior to the onset of the blinker activity. Based on the available spatial resolution the blinker occurs within, or nearby, an existing coronal loop. The temperature interfaces created in the reconnection process between the cool plasma of the newly emerging loop and the hot plasma of the existing loop are what we suggest to causes the observed activity seen in both the SUMER and CDS data. As the temperature interfaces propagate with the characteristic speed of a conduction front, they heat up the cool chromospheric plasma to coronal temperatures, an increasing volume of which brightens at transition region temperatures. We believe this new interpretation gives further qualitative understanding about the evolution of newly emerging flux on the Sun. This also provides new insight into the dynamic nature of the solar transition region.

Accepted by A&A

*For preprints contact*: jgd@star.arm.ac.uk

*For preprints via ftp or WWW*: http://star.arm.ac.uk/preprints/

## Does the Butterfly Diagram Indicate a Solar Flux-Transport Dynamo?

**M. Schüssler**[1] **and D. Schmitt**[1]

[1]Max-Planck-Institut für Aeronomie, Max-Planck-Str. 2, 37191 Katlenburg-Lindau, Germany

We address the question whether the properties of the observed latitude-time diagram of sunspot occurence (the butterfly diagram) provide evidence for the operation of a flux-transport dynamo, which explains the migration of the sunspot zones and the period of the solar cycle in terms of a deep equatorward meridional flow. We show that the properties of the butterfly diagram are equally well reproduced by a conventional dynamo model with migrating dynamo waves, but without transport of magnetic flux by a flow. These properties seem to be generic for an oscillatory and migratory field of dipole parity and thus do not permit an observational distinction between different dynamo approaches.

Accepted by A&A
*For preprints contact*: schuessler@linmpi.mpg.de
*For preprints via ftp or WWW*: http://arXiv.org/abs/astro-ph/0403570

## Indications of Shock Waves in the Solar Photosphere

**J. Rybák[1], H. Wöhl[2], A. Kučera[1], A. Hanslmeier[3] and O. Steiner[2]**

[1] Astronomical Institute, Slovak Academy of Sciences, SK-05960 Tatranská Lomnica, Slovakia
[2] Kiepenheuer-Institute für Sonnenphysik, Schöneckstr. 6, D-79104 Freiburg, Germany
[3] Institute for Geophysics, Astrophysics and Meteorology, Universitätsplatz 5, A-8010 Graz, Austria

High resolution observations of solar granulation near the solar limb are used in a search for hydrodynamic shocks caused by an abrupt braking of the fast (probably supersonic) horizontal flow of the granular plasma towards the intergranular lane. Shock signatures in the spectral line of Fe II 6456.38 Å of one particular observed shock event are investigated in detail. Evolution, amplitude, and spatial relation of the spectral line characteristics of the shock event are in agreement with predictions from numerical simulations for such shock phenomena in the solar photosphere. The dimensions and amplitudes of the observed shock signatures are comparable to predicted values when seeing and instrumental effects as well as a possible obliqueness of the shock front with respect to the observer's line-of-sight are taken into account. The temporal evolution of such an event is observed for the first time. The stable and declining phase of the event were studied for a time period of almost 2 minutes. A particular relationship was found between the shock event and a nearby G-band bright point located 2 arcsec from the shock event. It is suggestive that the observed shock is a causal consequence of the magnetic flux concentration, traced by the G-band bright point. Such a type of shock can appear outside the flux concentrations as a consequence of a rapid flux-tube motion.

Accepted by A&A

*For preprints contact*: choc@astro.sk

*For preprints via ftp or WWW*: http://www.astro.sk/~choc/publications/rwkhs _aa_2004/rwkhs_aa_2004.html

## Overshoot at the Base of the Solar Convection Zone – A Semi-analytical Approach

**M. Rempel[1]**

[1] HAO/ASP, National Center for Atmospheric Research, P.O. Box 3000, Boulder, CO 80307, USA

Despite the importance of overshoot at the base of the solar convection zone for the storage of strong toroidal magnetic field produced there by the solar dynamo, uncertainties concerning the depth and mean subadiabatic stratification remain large. Overshoot models based on the non-local mixing-length theory generally produce a shallow, weakly subadiabatic region with a sharp transition to the radiative interior, whereas several numerical simulations lead to significantly subadiabatic overshoot with penetration depth of more than a pressure scale height. We present a semi-analytical convection zone/overshoot model based on the assumption that the convective energy flux is governed by coherent downflow structures starting at the top of the domain and continuing all the way down into the overshoot region, which allows for modeling both the parameter regime addressed by non-local mixing-length approach as well as the regime addressed by numerical simulations. It turns out that the main differences between the non-local mixing-length approach and numerical simulations (nearly adiabatic versus strongly subadiabatic overshoot) are caused by the much larger energy flux used in numerical simulations as a consequence of larger thermal diffusivities required by numerical constraints. The depth of the overshoot region is determined predominantly by the mixing between downflows and upflows in the convection zone. Furthermore, our model shows that the sharp transition between the nearly adiabatic overshoot and radiative interior, a typical result of the non-local mixing-length approach, can be avoided by assuming an ensemble of downflows with different strength.

Accepted by ApJ

*For preprints contact*: rempel@hao.ucar.edu

## Rotation and Accretion of Very Low Mass Objects in the $\sigma$ Ori Cluster

**Alexander Scholz[1] and Jochen Eislöffel[1]**

[1] Thüringer Landessternwarte Tautenburg, Sternwarte 5, 07778 Tautenburg, Germany

We report on two photometric monitoring campaigns of Very Low Mass (VLM) objects in the young open cluster around $\sigma$ Orionis. Our targets were pre-selected with multi-filter photometry in a field of 0.36 sqdeg. For 23 of these objects, spanning a mass range from 0.03 to 0.7 $M_\odot$, we detect periodic variability. Of these, 16 exhibit low-level variability, with amplitudes of less than 0.2 mag in the I-band, which is mostly well-approximated by a sine wave. These periodicities are probably caused by photospheric spots co-rotating with the objects. In contrast, the remaining variable targets show high-level variability with amplitudes ranging from 0.25 to 1.1 mag, consisting of a periodic light variation onto which short-term fluctuations are superimposed. This variability pattern is very similar to the photometric behaviour of solar-mass, classical T Tauri stars. Low-resolution spectra of a few of these objects reveal strong H$\alpha$ and Ca-triplet emission, indicative of ongoing accretion processes. This suggests that 5-7% of our targets still possess a circumstellar disk. In combination with previous results for younger objects, this translates into a disk lifetime of 3-4 Myr, significantly shorter than for solar mass stars. The highly variable objects rotate on average slower than the low-amplitude variables, which is expected in terms of a disk-locking scenario. There is a trend towards faster rotation with decreasing mass, which might be caused by shortening of the disk lifetimes or attenuation of magnetic fields.

Accepted by A&A

*For preprints contact*: scholz@tls-tautenburg.de

*For preprints via ftp or WWW*: http://www.tls-tautenburg.de/research/tls-research/pub2004.html

## Detection and High-resolution Spectroscopy of a Huge Flare on the Old M9 Dwarf DENIS 104814.7-395606.1

**B. Fuhrmeister[1] and J. H. M. M. Schmitt[1]**

[1]Hamburger Sternwarte, University of Hamburg, Gojenbergsweg 112, 21029 Hamburg, Germany

We report a flare on the M9 dwarf DENIS 104814.7-395606.1, whose mass places it directly at the hydrogen burning limit. The event was observed in a spectral sequence during 1.3 hours. Line shifts to bluer wavelengths were detected in $H_\alpha$, $H_\beta$, and in the Na I D lines, indicating mass motions. In addition we detect a flux enhancement on the blue side of the two Balmer lines in the last spectrum of our series. We interpret this as rising gas cloud with a projected velocity of about 100 kms$^{-1}$ which may lead to mass ejection. The higher Balmer lines $H_\gamma$ to $H_8$ are not seen due to our instrumental setup, but in the last spectrum there is strong evidence for $H_9$ being in emission.

Accepted by A&A

*For preprints contact*: bfuhrmeister@hs.uni-hamburg.de

*For preprints via ftp or WWW*: http://www.hs.uni-hamburg.de/DE/Ins/Per/Fuhrmeister/index.html

*Ph.D. Thesis Abstracts*

# Absolute Magnitudes and Kinematics of Semiregular Variables

**Cahit Yeşilyaprak**

Thesis work conducted at: Physics Department, Art & Science Faculty, Akdeniz University, Turkey

Current address: Akdeniz University, Art & Science Faculty, Physics Department,

07058, Campus, Antalya, TURKEY

E-mail: cahity@akdeniz.edu.tr and astrophys@ttnet.net.tr

Ph.D dissertation directed by: Zeki Aslan

Ph.D degree awarded: December 2003

In this thesis, the period - luminosity (PL) and the period - colour (PC) relations, the aspects of mass loss, the pulsational properties of the M type - oxygen rich - semiregular (SR) variable stars were studied. The kinematics of SR variables and their kinematical age were also discussed.

Using the best Hipparcos parallaxes, the period - luminosity relations of SR variables with periods greater than 20 days were studied in several wavelength bands for the first time. It was found for the first time that the slope of the linear $M_\lambda$ - log P relation is a reasonably smooth function of the wavelength ($\lambda$). The different behaviour seen in the period - amplitude and period - colour (PC) relations at different bands and the implications of mass loss are discussed.

The period - radius (PR) and the period - luminosity (PL) relations were studied in terms of the pulsational properties of SR variables and compared with Mira variables, which indicates that the long period SR variables behave similarly to Miras and that it is not possible to distinguish between pulsational modes of SRs and Miras, supporting the earlier findings in the literature. If the Miras are first harmonic pulsators, then SRs pulsate in the second or higher modes.

The space velocites, space and velocity distributions of SR variables indicate that they are a reasonably homogeneous group and that they are similar to Galactic thin disk objects. Their kinematic ages are estimated to be between 7.5 and 9.0 Gyears.

*Upcoming Meeting*

# Dynamos of the Sun, Stars, and Planets

# Freiburg, Germany

# 4 – 6 October 2004

*FIRST ANNOUNCEMENT*

From 4 – 6 October 2004 the Kiepenheuer Institute for Solar Physics in Freiburg, Germany will host a scientific meeting on *DYNAMOS OF THE SUN, STARS AND PLANETS*. The meeting will be focused on theoretical aspects of the dynamo problem, covering the following topics: solar dynamo and activity cycle, the role of flux tubes and the tachocline for the dynamo, dynamos of the Earth and other planets, and stellar dynamos and cycles.

The meeting will consist of four half-day sessions, each including two invited reviews and a number of contributed talks.

Invited speakers are: Nigel Weiss, Axel Brandenburg, Peter Gilman, Manfred Schssler, Ulrich Christensen, Friedrich Busse, Wolfgang Dobler, and Klaus Strassmeier.

Interested scientists and students working in the field are invited to participate in our workshop and to submit an abstract for a oral or a poster presentation.

The deadline for abstracts and registration is **15 August 2004**.

Further information about the meeting can be found on the web-site:

http://www.kis.uni-freiburg.de/dynamo2004/ .

This site includes details on the scientific and social programme as well as on registration, abstract submission and venue.

Conference fee: There will be no fee. Nevertheless you need to register.

In case of any questions please send an email to hardi.peter@kis.uni-freiburg.de.

Pre-registration: If you consider participating in the meeting and want to get notified when more details are available, please send a short email to hardi.peter@kis.uni-freiburg.de , mentioning 'Dynamo 2004 – pre-registration' in the Subject line. Your email should contain the following information: Name, Institution, Email address.

We are looking forward to meeting you in Freiburg.

The LOC: Wolfgang Dobler, Oskar von der Lhe, Hardi Peter, Ute Rynarzewski, and Michael Stix.

## *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.***