COOLNEWS

A RESEARCH NEWSLETTER DEDICATED TO COOL STARS AND THE SUN

No. 78 — July 2002 Editor: Steve Skinner (coolnews@jila.colorado.edu)

TABLE OF CONTENTS

Stellar Abstracts

Search for Nearby Stars Among Proper Motion Stars Selected by Optical–to–Infrared Photometry. II. Two Late M dwarfs within 10 pc

Mark J. McCaughrean[1], **Ralf-Dieter Scholz**[1] **and Nicolas Lodieu**[1]
[1] Astrophysikalisches Institut Potsdam, An der Sternwarte 16, 14 482 Potsdam, Germany

We have identified two late M dwarfs within 10 parsecs of the Sun, by cross-correlating the Luyten NLTT catalogue of stars with proper motions larger than 0.18 arcsec/yr, with objects lacking optical identification in the 2MASS data base. The 2MASS photometry was then combined with improved optical photometry obtained from the SuperCOSMOS Sky Surveys. The two objects (LP775-31 and LP655-48) have extremely red optical-to-infrared colours ((R-K)$\sim$7) and very bright infrared magnitudes ($K_s \leq 10$): follow-up optical spectroscopy with the ESO 3.6-m telescope gave spectral types of M8.0 and M7.5 dwarfs, respectively. Comparison of their near-infrared magnitudes with the absolute magnitudes of known M8 and M7.5 dwarfs with measured trigonometric parallaxes yields spectroscopic distance estimates of 6.4+/-1.4 parsecs and 8.0+/-1.6 parsecs for LP775-31 and LP655-48, respectively. In contrast, Cruz & Reid (2002) recently determined spectral types of M6 for both objects, and commensurately larger distances of 11.3+/-1.3 parsecs and 15.3+/-2.6 parsecs. LP655-48 is also a bright X-ray source (1RXS J044022.8-053020). With only a few late M dwarfs previously known within 10 parsecs, these two objects represent an important addition to the census of the Solar neighbourhood.

Accepted by A&A (Letters)

For preprints contact: mjm@aip.de *For preprints via ftp or WWW*: astro-ph/0206378

Simultaneous X-ray Spectroscopy of YY Gem with Chandra and XMM-Newton

B. Stelzer[1], V. Burwitz[1], M. Audard[2], M. Güdel[2], J.-U. Ness[3], N. Grosso[1], R. Neuhäuser[1], J. H. M. M. Schmitt[3], P. Predehl[1] and B. Aschenbach[1]

[1] Max-Planck Institut für extraterrestrische Physik, Postfach 1312, D-85741 Garching, Germany
[2] Paul Scherrer Institut, Würenlingen & Villigen, 5232 Villigen, Switzerland
[3] Hamburger Sternwarte, Gojenbergsweg 112, D-21029 Hamburg, Germany

We report on a detailed study of the X-ray spectrum of the nearby eclipsing spectroscopic binary YY Gem. Observations were obtained simultaneously with both large X-ray observatories, *XMM-Newton* and *Chandra*. We compare the high-resolution spectra acquired with the Reflection Grating Spectrometer onboard *XMM-Newton* and with the Low Energy Transmission Grating Spectrometer onboard *Chandra*, and evidence in direct comparison the good performance of both instruments in terms of wavelength and flux calibration. The strongest lines in the X-ray spectrum of YY Gem are from oxygen. Oxygen line ratios indicate the presence of a low-temperature component ($1-4$ MK) with density $n_{\rm e} \leq 2\,10^{10}\,{\rm cm}^{-3}$. The X-ray lightcurve reveals two flares and a dip corresponding to the secondary eclipse. An increase of the density during phases of high activity is suggested from time-resolved spectroscopy. Time-resolved global fitting of the European Photon Imaging Camera CCD spectrum traces the evolution of temperature and emission measure during the flares. These medium-resolution spectra show that temperatures $> 10^7$ K are relevant in the corona of YY Gem although not as dominant as the lower temperatures represented by the strongest lines in the high-resolution spectrum. Magnetic loops with length on the order of 10^9 cm, i.e., about 5 % of the radius of each star, are inferred from a comparison with a one-dimensional hydrodynamic model. This suggests that the flares did not erupt in the (presumably more extended) inter-binary magnetosphere but are related to one of the components of the binary.

Accepted by A&A

For preprints contact: stelzer@xray.mpe.mpg.de

For preprints via ftp or WWW: http://www.xray.mpe.mpg.de/~stelzer/publications.html

Lithium Abundances in Wide Binaries with Solar-Type Twin Components

Eduardo L. Martín[1], Gibor Basri[2], Yakiv Pavlenko[3] and Yuri Lyubchik[3]

[1] Institute for Astronomy, University of Hawaii at Manoa, 2680 Woodlawn Drive, Honolulu HI 96822 USA
[2] Dept. of Astronomy, 601 Campbell Hall, Univ. of California, Berkeley, CA 94720 USA
[3] Main Astronomical Observatory of the Ukrainian Academy of Sciences, Kiev, Ukraine

We present high-resolution spectroscopic observations of the Li I resonance line in a sample of 62 stars that belong to 31 common-proper motion pairs with twin F or G-type components. Photospheric abundances of lithium were derived by spectral synthesis analysis. For seven of the pairs, we have measured large lithium abundance differences. Eleven other pairs have components with similar lithium abundances. We cannot determine if the remaining 13 pairs have lithium differences because we did not detect the Li I lines, and hence we can only provide upper limits to the abundances of both stars. Our results demonstrate that twin stars do not always share the same lithium abundances. Lithium depletion in solar-type stars does not only depend on age, mass, and metallicity. This result is consistent with the spread in lithium abundances among solar-type stars in the solar-age open cluster M67. Our stars are brighter than the M67 members of similar spectral type, making them good targets for detailed follow-up studies that could shed light on the elusive mechanism responsible for the depletion of lithium during the main-sequence evolution of the Sun and solar-type stars.

Accepted by ApJ

For preprints contact: ege@ifa.hawaii.edu

Statistical Analysis of 5-Year Continuous Radio Flare Data from β Per, V711 Tau, δ Lib, and UX Ari

Mercedes T. Richards[1], Elizabeth B. Waltman[2] and Frank D. Ghigo[3]

[1] Dept. of Astronomy & Astrophysics, Penn State Univ., 525 Davey Lab., University Park, PA 16802 USA
[2] Naval Research Laboratory, Code 7214, 4555 Overlook Ave. S.W., Washington, D.C. 20375-5351 USA (retired)
[3] National Radio Astronomy Observatory, P.O. Box 2, Green Bank, WV 24944 USA

We report on the longest-running continuous radio flare survey of two Algol-type systems (β Per and δ Lib) and two RS CVn systems (V711 Tau and UX Ari). All four systems have late-type components, and all were known to display radio flaring activity. The primary aim of the campaign was to determine the timescales for flaring activity in these systems. The radio continuum flux at 2.3 GHz and 8.3 GHz was monitored with the NRAO–Green Bank Interferometer from 1995 January to 2000 October. The survey spanned 2096 days with interruptions during maintenance runs and temporary closings of the interferometer. Many strong flares were detected with continuum fluxes at 8.3 GHz as high as 1.17 Jy in β Per, 1.44 Jy in V711 Tau, and 0.82 Jy in UX Ari. Only two flares were detected from δ Lib during 1123 days of monitoring, and the continuum flux reached a maximum of only 0.034 Jy at 8.3 GHz. The independent techniques of Power Spectrum Analysis and Phase Dispersion Minimization were used to determine the periodicity of flaring activity in each binary. The strongest periodicities found were (48.9 $\pm$ 1.7) days for β Per, (120.7 $\pm$ 3.4) days for V711 Tau, and (141.4 $\pm$ 4.5) days for UX Ari, with other significant periodicities of (80.8 $\pm$ 2.5) days for V711 Tau and (52.6 $\pm$ 0.7) days for UX Ari. In the case of δ Lib, the strongest periodicities were related to the duration of the two monitoring cycles within the data set, and are not real. The continuous survey has demonstrated that there are active and quiescent flaring cycles in V711 Tau and β Per. During both of these cycles, β Per had more flares than V711 Tau, but its strongest flares were typically weaker than those of V711 Tau.

Submitted to ApJ

For preprints contact: mtr@astro.psu.edu

Membership, Metallicity and Lithium Abundances for Solar-type Stars in NGC 6633

R. D. Jeffries[1], E. J. Totten[1], S. Harmer[1] and C. P. Deliyannis[2]

[1] Department of Physics, Keele University, Keele, Staffordshire, ST5 5BG, UK
[2] Department of Astronomy, Indiana University, 727 East 3rd Street, Swain Hall West 319, Bloomington, IN 47405-7105, USA

We present spectroscopic observations of candidate F, G and K type stars in NGC 6633, an open cluster with a similar age to the Hyades. From the radial velocities and metal-line equivalent widths we identify 10 new cluster members including one short period binary system. Combining this survey with that of Jeffries (1997), we identify a total of 30 solar-type members. We have used the F and early G stars to spectroscopically estimate [Fe/H]$= -0.096 \pm 0.081$ for NGC 6633. When compared with iron abundances in other clusters, determined in a strictly comparable way, we can say with more precision that NGC 6633 has (0.074 ± 0.041) dex less iron than the Pleiades and (0.206 ± 0.040) dex less iron than the Hyades. A photometric estimate of the overall metallicity from the locus of cluster members in the B-V, V-I_c plane, yields [M/H]$= -0.04 \pm 0.10$. A new estimate, based upon isochrones that are empirically tuned to fit the Pleiades, gives a distance modulus to NGC 6633 that is 2.41 ± 0.09 larger than the Pleiades.

Lithium abundances have been estimated for the NGC 6633 members and compared with consistently determined Li abundances in other clusters. Several mid F stars in NGC 6633 show strong Li depletion at approximately the same effective temperature that this phenomenon is seen in the Hyades. At cooler temperatures the Li abundance patterns in several open clusters with similar ages (NGC 6633, Hyades, Praesepe and Coma Berenices) are remarkably similar, despite their differing [Fe/H]. There is however evidence that the late G and K stars of NGC 6633 have depleted less Li than their Hyades counterparts. This qualitatively agrees with models for pre-main sequence Li depletion that feature only convective mixing, but these models cannot simultaneously explain why these stars have in turn depleted Li by more than 1 dex compared with their ZAMS counterparts in the Pleiades. Two explanations are put forward. The first is that elemental abundance ratios, particularly [O/Fe], may have non-solar values in NGC 6633 and would have to be higher than in either the Hyades or Pleiades. The second is that additional non-convective mixing, driven by angular momentum loss, causes additional photospheric Li depletion during the first few hundred Myr of main sequence evolution.

Accepted by MNRAS

For preprints contact: rdj@astro.keele.ac.uk

For preprints via ftp or WWW: http://www.astro.keele.ac.uk/~rdj/

Solar Abstracts

Transition Region Explosive Events: Do They Have a Coronal Counterpart?

L. Teriaca[1], M. S. Madjarska[2], J. G. Doyle[2]

[1]Osservatorio Astrofisico di Arcetri, 50125 Firenze, Italy,
[2]Armagh Observatory, Armagh BT61 9DG, N. Ireland

EUV explosive events are a prominent class of phenomena characterizing the solar transition region. Their correct location in the wider frame-work of the outer solar atmosphere can provide important insight on the nature of the transition region itself and its relationship with the hotter corona and the cooler chromosphere. In this paper we present new high-cadence SUMER observations of the "quiet" Sun obtained simultaneously in the mid-transition region N V 1238.8 Å line (1.8×10^5 K) and in the coronal Mg X 625 Å line (1.1×10^6 K). These observations are aimed at providing information on the behaviour of the coronal plasma during EUV transition region explosive events detected in N V 1238.8 Å. None of the events observed in N V shows any detectable signature in the Mg X line profile or in its integrated intensity. The analysis of 1996 observations obtained simultaneously in N V 1238.8 Å and S II 1253.8 Å (3.5×10^4 K) shows, instead, a weak but clear presence of enhanced wings in the S II line profile during a series of events observed in N V. These results suggest that EUV explosive events are not directly relevant in heating the corona and are characteristic of structures not obviously connected with the upper corona. The evidence of a chromospheric response suggests that, contrary to some previous suggestions, explosive events have a chromospheric origin.

Accepted by A&A

For preprints contact: lte@arcetri.astro.it

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

Low-Mass and Substellar Abstracts

The Planet Search Program at the ESO Coudé Echelle Spectrometer. III. The Complete Long Camera Survey Results

M. Endl[123], M. Kürster[34], S. Els[5437], A. P. Hatzes[4], W.D. Cochran[2], K. Dennerl[6], S. Döbereiner[6]

[1] Universität Wien, Institut für Astronomie, Türkenschanzstr. 17, A-1180 Wien, Austria
[2] McDonald Observatory, The University of Texas at Austin, Austin, TX 78712-1083, USA
[3] European Southern Observatory, Casilla 19001, Santiago 19, Chile
[4] Thüringer Landessternwarte Tautenburg, Sternwarte 5, 07778 Tautenburg, Germany
[5] Isaac Newton Group of Telescopes, Apartado de Correos 321, E-38700 Santa Cruz de La Palma, Spain
[6] Max–Planck–Institut für extraterrestrische Physik, Giessenbachstr., D-85748 Garching, Germany
[7] Universität Heidelberg, Institut für Theoretische Astrophysik, Tiergartenstr. 15, D–69121 Heidelberg, Germany

We present the complete results of the planet search program carried out at the ESO Coudé Echelle Spectrometer (CES) on La Silla, using the Long Camera from Nov. 1992 to April 1998. The CES survey has monitored 37 late-type (F8V – M5V) stars in the southern hemisphere for variations in their differential radial velocities (RV) in order to detect Doppler reflex motions caused by planetary companions. This led to the discovery of the first extrasolar planet in an Earth-like orbit around the young (ZAMS) and active G0V star ι Horologii (Kürster et al. 2000). Here we present the RV results for all survey stars and perform a statistical examination of the whole data-set. Each star is tested for RV variability, RV trends (linear and non-linear) and significant periodic signals. β Hyi and ϵ Ind are identified as long-term, low-amplitude RV variables. Furthermore, for 30 CES survey stars we determine quantitative upper

mass-limits for giant planets based on our long-term RV results. We find that the CES Long Camera survey would have detected short-period ("51 Peg-type") planets around *all* 30 stars but no planets with $m \sin i < 1$ $\mathrm{M_{Jup}}$ at orbital separations larger than 2 AU. Finally, we demonstrate that the CES planet search can be continued without applying velocity corrections to the RV results coming from the currently installed Very Long Camera at the CES.

Accepted by A&A

For preprints contact: mike@astro.as.utexas.edu

The CORALIE Survey for Southern Extra-solar Planets IX. A 1.3-day Period Brown Dwarf Disguised as a Planet

N.C. Santos[1], M. Mayor[1], D. Naef[1], F. Pepe[1], D. Queloz[1], S. Udry[1], M. Burnet[1], J.V. Clausen[2], B.E. Helt[2], E.H. Olsen[2] and J.D. Pritchard[3]

[1] Observatoire de Genève, 51 ch. des Maillettes, CH–1290 Sauverny, Switzerland

[2] Niels Bohr Institute for Astronomy, Physics, and Geophysics; Astronomical Observatory, Juliane Maries Vej 30, DK-2100 Copenhagen Ø, Denmark [3] European Southern Observatory, Santiago, Chile

In this article we present the case of HD 41004 AB, a system composed of a K0V star and a 3.7-magnitude fainter M-dwarf companion. We have obtained 86 CORALIE spectra of this system with the goal of obtaining precise radial-velocity measurements. Since HD 41004 A and B are separated by only 0.5 arcsec, in every spectrum taken for the radial-velocity measurement, we are observing the blended spectra of the two stars. An analysis of the measurements has revealed a velocity variation with an amplitude of about $50\,\mathrm{m\,s^{-1}}$ and a periodicity of 1.3 days. This radial-velocity signal is consistent with the expected variation induced by the presence of a companion to either HD 41004 A or HD 41004 B, or to some other effect due to e.g. activity related phenomena. In particular, such a small velocity amplitude could be the signature of the presence of a very low mass giant planetary companion to HD 41004 A, whose light dominates the spectra. The radial-velocity measurements were then complemented with a photometric campaign and with the analysis of the bisector of the CORALIE Cross-Correlation Function (CCF). While the former revealed no significant variations within the observational precision of ∼0.003-0.004 mag (except for an observed flare event), the bisector analysis showed that the line profiles are varying in phase with the radial-velocity. This latter result, complemented with a series of simulations, has shown that we can explain the observations by considering that HD 41004 B has a brown-dwarf companion orbiting with the observed 1.3-day period. As the spectrum of the fainter HD 41004 B "moves" relative to the one of HD 41004 A (with an amplitude of a few $\mathrm{km\,s^{-1}}$), the relative position of the spectral lines of the two spectra changes, thus changing the blended line-profiles. This variation is large enough to explain the observed radial-velocity and bisector variations, and is compatible with the absence of any photometric signal. If confirmed, this detection represents the first discovery of a brown dwarf in a very short period (1.3-day) orbit around an M dwarf. Finally, this case should be taken as a serious warning about the importance of analyzing the bisector when looking for planets using radial-velocity techniques.

Accepted by A&A

For preprints contact: Nuno.Santos@obs.unige.ch

For preprints via ftp or WWW: http://obswww.unige.ch/∼santos/publications.html

A Methane Isolated Planetary Mass Object in Orion

M. R. Zapatero Osorio[1], V. J. S. Béjar[2], E. L. Martín[3], R. Rebolo[2], D. Barrado y Navascués[1], R. Mundt[4], J. Eislöffel[5], and J. A. Caballero[2]

[1] LAEFF-INTA, P. O. Box 50727, E-28080 Madrid, Spain

[2] Instituto de Astrofísica de Canarias, E-38205 La Laguna, Tenerife, Spain

[3] Institute of Astronomy, Univ. of Hawaii at Manoa, 2680 Woodlawn Drive, Honolulu, HI 96822 USA

[4] Max-Planck-Institut für Astronomie, Königstuhl 17, D-69117 Heidelberg, Germany

[5] Thüringer Landessternwarte Tautenburg, Sternwarte 5, D-07778 Tautenburg, Germany

We report on the discovery of a free-floating methane dwarf toward the direction of the young star cluster σ Orionis. Based on the object's far-red optical and near-infrared photometry and spectroscopy, we conclude that it is a possible member of this association. We have named it as S Ori J053810.1–023626 (S Ori 70 is the abridged name). If it is a true member of σ Orionis, the comparison of the photometric and spectroscopic properties of S Ori 70 with state-of-the-art

evolutionary models yields a mass of 3^{+5}_{-1} Jupiter mass for ages between 1 Myr and 8 Myr. The presence of such a low-mass object in our small search area (55.4 arcmin^2) would indicate a rising substellar initial mass function in the σ Orionis cluster even for planetary masses.

Accepted by ApJ

For preprints contact: mosorio@laeff.esa.es

For preprints via ftp or WWW: http://xxx.lanl.gov/abs/astro-ph/0206353

X-ray Emission near the Substellar Limit: The σ Orionis and Taurus Star Forming Regions

F. Mokler[1] and B. Stelzer[1]

[1]Max-Planck-Institut für extraterrestrische Physik, Postfach 1312, D-85741 Garching, Germany

We have carried out an extensive search for X-ray emission from young, very low-mass objects near and beyond the substellar limit, making use of archived *ROSAT* PSPC and HRI observations pointed at Brown Dwarfs and Brown Dwarf candidates in the young σ Orionis and Taurus-Auriga associations. In σ Ori we identify three Brown Dwarf candidates with X-ray sources; in Taurus-Auriga we add one further X-ray detection of a Brown Dwarf to the list published earlier. We combine this data with all previously X-ray detected Brown Dwarfs and Brown Dwarf candidates in young stellar associations and star forming regions to perform a study of stellar activity parameters on the as yet largest sample of young, very low mass objects. A similar relation between X-ray and bolometric luminosity, and Hα emission, respectively, as is known for T Tauri stars seems to hold for young objects down to the substellar limit, too. No signs for a change in X-ray activity are found on the transition to substellar masses.

Accepted by A&A

For preprints contact: fmokler@mpe.mpg.de

For preprints via ftp or WWW: http://www.xray.mpe.mpg.de/ stelzer/publications.html

Helioseismology and Diagnostics of Internal Magnetic Layers

Claire-Uriel A. M. A. Foullon

Thesis work conducted at: School of Mathematics and Statistics, University of St. Andrews, Scotland, UK

Current address: Royal Observatory of Belgium - 3, avenue Circulaire B-1180 Bruxelles - Belgium

E-mail: claire.foullon@oma.be

Ph.D dissertation directed by: Bernard Roberts

Ph.D degree awarded: June 2002

Solar magnetic fields, as well as temperature changes, introduce pressure deviations that play a significant role in modulating the resonant frequencies of p-mode oscillations. Those pressure deviations occurring in the atmosphere or sub-surface of the Sun can explain the frequency shifts observed on the timescale of the solar activity cycle. A separate study of the contribution of internal magnetic layers can clarify the relative importance of surface effects.

Results from helioseismology provide realistic constraints for choosing parameters suitable to represent the magnetic layers buried in the solar interior and available for modelling, *i.e.* at the base of the convection zone and in the sunspots' anchoring zone. Diagnostics of the internal magnetic layers are obtained through a schematic model in which the Sun is plane-stratified. The influence of a buried magnetic field on p-modes is explored, and the nature of various waves and instabilities that can arise on such a buried magnetic field is assessed.

By treating the effects of internal magnetic layers, this thesis contributes to the building of a bridge between theories and observations. On the one hand, the theoretical analysis is explored carefully in the course of its formulation, which generates new hypotheses that were not obvious so far. On the other hand, observations help to understand which explanations of the solar cycle frequency shifts may apply.

UPCOMING MEETING

UK National Astronomy Meeting & UK Solar Physics Meeting

April 7 - 11, 2003
Dublin Castle
Ireland

The next UK National Astronomy Meeting plus the annual UK Solar Physics meeting held be held in Dublin Castle, Ireland from April 7-11, 2003. Details on the programme, plus registration information may be obtained from the WEB site:

http://star.arm.ac.uk/nam2003/

Submitted by: Gerry Doyle (jgd@star.arm.ac.uk)

UPCOMING MEETING

The Stars are Suns: Activity, Evolution, and Planets IAU Symposium 219 at the IAU GENERAL ASSEMBLY

July 21 - 25, 2003
Sydney, Australia

Co-chairs: A. O. Benz (ETH) and A. K. Dupree (CfA)

Scientific Organizing Committee: A. P. Boss, L. E. Cram, D. Dravins, O. Engvold, E. F. Guinan, T. Kosugi, R. P. Lin, R. Rebolo, and J. H. M. M. Schmitt

New observations, mainly at higher energies from UV to gamma-rays, have become possible for the atmospheres of the Sun and the stars. This joint solar and stellar symposium addresses the underlying physics and the considerable advances in theory that are resulting from instruments such as Chandra, XMM, FUSE, TRACE, HESSI, THEMIS, and the SMA. Progress in the new physics of the Sun permits deeper understanding of similar processes in cool stars. Here we focus on solar/stellar magnetic activity and its evolution. Topics include coronal heating and structures in single and binary stars, atmospheric abundance anomalies, flares and transient events, winds and mass loss. Enormous scientific and public interest centers on cool stars and their planets. We consider especially the characteristics of stars hosting planets and the theory and observation of interactions between planets and their parent cool stars. Topics will also be selected for presentation from an associated poster session.

IAU/General Assembly Web Site: http://www.astronomy2003.com

Job Openings

Postdoctoral Position (Stellar Coronae)
MIT Center for Space Research
Cambridge, MA

The MIT Center for Space Research has an opening for a postdoctoral research associate to perform analysis of X-ray spectra of active stellar coronae obtained with the Chandra X-ray Observatory High Resolution Transmission Grating Spectrometer. Goals are to measure and model the X-ray spectra of coronally active stars as a function of rotational phase or time. Determination of temperature and density structure and of elemental abundances are fundamental to the theoretical underpinning of coronal heating mechanisms. The work will entail applications of thermal plasma emission models, dynamic flare models, and spectroscopic line-based analysis techniques to the observations.

Experience with X-ray astronomical data analysis methods, such as with one or more data analysis packages (ISIS, CIAO, XSPEC), programming languages (IDL, Slang, C), or with astronomical high-resolution spectroscopy (X-ray, optical or UV) is highly desirable.

The position requires a Ph.D. in astronomy, physics, or closely related field. Applicants should send their resume and three letters of reference to Dr. David P. Huenemoerder at the address below.

AAE/EOE.

No. 02-0000100
Postdoctoral Research Position, Stellar Coronae
MIT CENTER FOR SPACE RESEARCH
Center for Space Research, NE80-6023
70 Vassar St.
Cambridge, MA 01239

Tel: 617-253-4283
FAX: 617-253-8084

Email Submission Address: dph@space.mit.edu
Email Inquiries: dph@space.mit.edu
http://web.mit.edu/jobs/listings/02-0000100.html
Attention: Dr. David P. Huenemoerder

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.***