COOLNEWS

A RESEARCH NEWSLETTER DEDICATED TO COOL STARS AND THE SUN

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Stellar Abstracts

The Properties of the Local Interstellar Medium and the Interaction of the Stellar Winds of ϵ Indi and λ Andromedae with the Interstellar Environment

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We present new observations of the Lyman-α lines of ϵ Indi (K5 V) and λ Andromedae (G8 IV-III + ?). These data were obtained by the Goddard High Resolution Spectrograph (GHRS) on the Hubble Space Telescope. Analysis of the interstellar H I and D I absorption lines reveals that the velocities and temperatures inferred from the H I lines are inconsistent with the parameters inferred from the D I lines, unless the H I absorption is assumed to be produced by two absorption components.

One absorption component is produced by interstellar material. We believe that hot hydrogen surrounding ϵ Ind and λ And is responsible for the second H I absorption component, although we consider this conclusion to be tentative in the case of λ And. These "hydrogen walls" are produced by the interaction of the winds of these stars with the surrounding interstellar material. An analogous solar hydrogen wall has been predicted by recent models of the heliospheric interface region and confirmed by GHRS observations of α Cen. The column densities we measure for the second components are $\log N_{\rm H\ I} = 14.2 \pm 0.2$ and $\log N_{\rm H\ I} = 14.8 \pm 0.2$ for ϵ Ind and λ And, respectively, and the temperatures are $100,000 \pm 20,000$ K and $62,000 \pm 18,000$ K. These temperatures are too hot for the solar hydrogen wall, and for ϵ Ind the velocity of the second component is clearly inconsistent with the solar hydrogen wall. Thus, for these components we assume a stellar origin, in which the higher temperatures are a consequence of higher interstellar wind velocities in the stellar rest frames. Because the heliospheric models demonstrate the importance of the solar wind in the formation of the solar hydrogen wall, our detection of analogous structures around ϵ Ind and perhaps λ And may constitute a first detection of solar-like winds around dwarf and subgiant stars.

Accepted by ApJ

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A Major Optical Flare on the Recently Discovered X-ray Active dMe Star G102-21

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During the course of UBV photoelectric measurements made at the Catania Astrophysical Observatory we have observed an unusually intense optical flare on the nearby M dwarf G102-21, the optical counterpart of a strong X-ray source recently detected by ROSAT.

The amplitude of the magnitude increase ($\Delta U \sim 7.3$ mag) and the total energy release in the UBV bands ($E_{UBV} \sim (1.4 \pm 0.3) \times 10^{35}$ erg) put this event among the strongest flares ever detected on UV Ceti-type stars. The U-B and B-V colours of the flare emission did not significantly change during most of the flare development. While the B-V is quite a typical colour for stellar flares, the U-B is much bluer when compared with typical values given in the literature. This unusually strong ultraviolet component of the flare emission, together with the very fast flare decay, suggest a possible flare site close to the limb. We find that the observed amount of flare energy could be explained by the fast release of energy stored in a magnetic filament located in between the two G102-21 stellar components, with a surface magnetic field $\geq$3600 G. The characteristics of the quiescent optical emission are also discussed.

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The NLTE Formation of Neutral Boron Lines in Cool Stars

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We study the formation of B I lines in a grid of cool stellar model atmospheres without the assumption of local thermodynamic equilibrium (LTE). The non-LTE modelling includes the effect of other lines blending with the LTE resonance lines. Except for the cases where the LTE lines are very strong, the departures from LTE relevant for the resonance lines can be described as an overionisation effect and an optical-pumping effect. This causes the lines to be weaker than in LTE so that an abundance analysis assuming LTE will underestimate stellar boron abundances. We present non-LTE abundance corrections useful to improve on abundances derived from the B I 250 nm and 209 nm lines under the LTE assumption. Application of the results on literature data indicates that the B/Fe ratio in metal-poor stars is constant.

Accepted by A&A

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For preprints and computer routines via ftp or WWW: ftp://ftp.astro.uio.no/pub/boron

Synthetic Spectra and Mass Determination of the Brown Dwarf Gl229B

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We present preliminary non-grey model atmospheres and interiors for cool brown dwarfs. The resulting synthetic spectra are compared to available spectroscopic and photometric observations of the coolest brown dwarf yet discovered, Gl229B (Nakajima et al. 1995). Despite the grainless nature of the present models, we find the resulting synthetic spectra to provide an excellent fit to most of the spectral features of the brown dwarf. We confirm the presence of methane absorption and the substellar nature of Gl229B. These preliminary models set an upper limit for the effective temperature of 1000 K. We also compute the evolution of brown dwarfs with solar composition and masses from 0.02

to 0.065 $M_\odot$. While uncertainties in the age of the system yield some undetermination for the mass of Gl229B, the most likely solution is $m \approx 0.04 - 0.055 M_\odot$. In any case, we can set an upper limit $m = 0.065 M_\odot$ for a very unlikely age $t = 10$ Gyr.

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Analysis of Keck High Resolution Spectra of VB10

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We use a preliminary version of our "NextGen" grid of cool star model atmospheres to compute synthetic line profiles which fit high resolution Keck spectra of the cool M dwarf VB10 satisfactorily well. We show that the parameters derived from the Keck data are consistent with the parameters derived from lower resolution spectra with larger wavelength coverage. We discuss the treatment of van der Waals broadening in cool, molecular (mostly H_2) dominated stellar atmospheres. The line profiles are dominated by van der Waals pressure broadening and are a sensitive indicator for the gravity and metallicity. Therefore, the high-resolution Keck spectra are useful for determining the parameters of M dwarfs. There is some ambiguity between the metallicity and gravity. For VB10, we find from the high-resolution spectra that $5.0 < \log(g) < 5.5$ and $0 < \left[\frac{\mathrm{M}}{\mathrm{H}}\right] < +0.5$, for an adopted fixed effective Temperature of 2700 K (Schweitzer, 1995), which is consistent with recent interior calculations (Baraffe et al., 1995).

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Starspot and Chromospheric Activity of λ And in 1978-1995

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More than 150 UV spectra of λ And obtained by the IUE satellite during its 17 years mission are used to check a link between solar and stellar activity phenomena. Measurements of "pseudocontinuum" flux in the range 2806-2930 Å proved that UV brightness, m_{UV}, is well correlated with visual magnitude, V, and can be used as indicator of spottedness. It would be interesting to check behaviour of m_{UV}-V colour index in other stars. There is no correlation between intensity of emission of Mg II h+k lines and visibility of starspots. The same is true for the total flux of TR lines. This lack of correlations makes doubtful the general analogy between solar and λ And structure of active regions. There is a correlation between intensities of TR lines and Mg II, indicating that active regions on λ And surface extend from the chromosphere to the TR layers. Large, long term changes of emission lines intensities are not related to the photometric phase. We have found however, some small (5%) changes in strength of emission lines (both MgII and TR lines) related to the tidal interaction. Emissions are slightly stronger when the tidal bulge is in front of the observer. λ And is a binary rotating asynchronously with the orbital motion. Because of the crucial role of tidal interactions in evolution of the binary systems, it would be very intersting to check if other semidetached asynchronous systems also display tidal effects. Phase lag of tides (ϕ_0) is the fundamental observable for checking the validity of calculations of tidal synchronization and cicularization times. Unfortunately, from our data we can only suggest that the phase lag is very small, if any.

Submitted to Acta Astr.

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Are Rotational Axes Perpendicular to Orbital Planes in Binary Systems. III. Main Sequence and Short-Period RS CVn Stars.

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Inclinations of the rotational axes, i_{rot}, are determined for 46 main sequence binaries of F,G,K and M spectral type and short period RS CVn systems. Seven binaries are asynchronous. The inclinations i_{rot} are then compared with the orbital inclinations, i_{orb}, to test the alignment between the equatorial and orbital planes. In all 39 cases of synchronous rotators i_{rot} is equal or nearly equal to i_{orb}. In a sample of seven asynchronous systems, at least six, and perhaps all, are non-coplanar.

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Long-term Monitoring of Active Stars.
VI. UBV(RI)$_c$ Photometry Collected in Sep-Oct 1990

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High-precision UBV(RI)$_c$ photometry of 9 active stars, collected at the European Southern Observatory over the period September - October 1990, is presented. Significant evolution of the light curves, period variations and, in most cases, evidence for long-term variability of the global degree of spottedness are found. Some of the spectral classifications are discussed.
The stars observed are: HD 5303 = CF Tuc, HD 8435 = BC Phe, HD 16157 = CC Eri, HD 32918 = YY Men, HD 155555 = V824 Ara, HD 174429 = PZ Tel, HD 197481 = AU Mic, HD 214479 = FK Aqr, HD 217344 = TZ PsA.

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Near-Simultaneous X-Ray and Optical Observations of the RS CVn Binary SV Cam

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We report on a multi-wavelength campaign of optical and X-ray observations of the short-period eclipsing RS CVn binary star SV Cam. We present an X-ray light curve measured by ROSAT in Aug. 93, two V-band light curves obtained in Sep. and Nov. 93, and Doppler imagery based on high-resolution spectroscopy of photospheric absorption lines observed Sep.–Nov. 93. The total X-ray output of the SV Cam *binary* was found to be on a level typical for *single* main sequence stars. Thus SV Cam does not appear to be overactive, contrary to what is generally claimed for RS CVn systems. We model the X-ray light curve with two extended coronal emission regions. One region is located above a photospheric region of the primary star where spots have frequently been observed and where we find evidence for photospheric spots from our optical data. The second X-ray source in our model is located between the two components of the binary. Our Doppler image shows a distinct spot on the primary star centred at a stellar latitude of 60°. This spot is also found in an analysis of the optical light curve observed in September. A second spot in the Doppler image, which appears as an appendage to the main feature, seems to be spatially correlated with the second X-ray source. While our analysis yields no evidence for this feature in the September light curve it clearly determines the November light curve indicating rapid evolution of an active spotted region. Furthermore, we find evidence of strong (chromospheric) activity on the secondary star of SV Cam. During secondary eclipse the strength of the Hα absorption line of the single-lined binary increases by a much larger factor than can be accounted for by continuum light (or lack thereof) from the secondary indicating strong Hα emission from the secondary star. Also during primary eclipse absorption features from the secondary star become visible in all photospheric lines except Hα which argues strongly for the lack of Hα absorption and, hence, for the appearance of significant amounts of Hα emission in the secondary star.

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Modeling the Violet Spectral Region of Cool Stars: Line and Continuous Opacity

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The calculated flux distribution in the 300 to 400 nm region only fits the observed distribution closely for both the Sun and Arcturus when the complete ATLAS9 line list is used. However, a good fit to the detailed shape of the observed high resolution spectrum in the Sun may only be obtained by using a sub-set of this line list that only includes lines with the highest quality atomic data. Moreover, for Arcturus, even the sub-set of high quality lines can only provide a close fit to the observed high resolution spectrum if we include, *ad hoc*, an extra amount of continuous absorption opacity. We suggest that the complete ATLAS9 line list contains many lines that either do not exist, or have oscillator strengths that are too strong, and that the inclusion of a hitherto undiscovered source of continuous absorption opacity is necessary to fit the violet flux in late-type stars.

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Proper Motions of Water Vapour Masers and Bipolar Outflow from NML Cygni

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MERLIN observations of the 22-GHz H_2O masers in the circumstellar envelope of the supergiant NML Cyg show an irregular ring of emission 200 mas across, plus a pair of outlying features to the NW and SE nearly 600 mas apart. Comparison with maps at previous epochs reveals proper motions of these outlying features, of 1.9 ± 0.4 mas yr^{-1}. This corresponds to a transverse velocity of 19 ± 4 km s^{-1} at a distance of 2 kpc, which is consistent with the radial velocity range of the 22-GHz emission. The remaining masers which form the irregular ring are modelled as an expanding and accelerating thick shell. The NW-SE symmetry axis of the H_2O masers is aligned with a NW-SE asymmetry which occurs in the OH 1612-MHz masers on a larger scale of 3 arcsec. It appears that this is an internally driven effect, most likely a bipolar outflow which is more highly collimated near the star (H_2O masers) and becomes less collimated at greater distances (OH masers). The results are compared with bipolar outflows seen in other evolved objects.

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The Masses and Radii of the Eclipsing Binary ζ Aurigae

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We present a full determination of the fundamental stellar and orbital parameters of the eclipsing binary ζ Aurigae (K4 Ib + B5 V) using recent observations with the Hubble Space Telescope Goddard High Resolution Spectrograph (GHRS) and the Mark III long baseline optical interferometer. The information obtained from spectroscopic and interferometric measurements is complementary, and the combination permits a complete determination of the stellar masses, the absolute semi-major axis of the orbit, and the distance. A complete solution requires that both components be visible spectroscopically, and this has always been difficult for the ζ Aur systems. The ζ Aur K star primary presents no difficulty, and accurate radial velocities are readily obtainable in the optical. However, the B star secondary is more problematic. Ground-based radial velocity measurements are hampered by the difficulty of working with the composite spectrum in the blue-violet region, the small number of suitable lines in the generally featureless optical spectrum of the B star, and the great width of the few available lines (the Balmer lines of hydrogen and a few weak He I lines) due to rapid rotation. We avoid the worst of these problems by using GHRS observations in the ultraviolet where the K star flux is negligible and the intrinsic B star spectrum is more distinctive, and obtain the most accurate determination of the B star radial velocity amplitude to date. We also analyze published photometry of previous eclipses and near-eclipse phases of ζ Aur in order to obtain eclipse durations, which fix the length of the eclipse chord and therefore determine the orbit inclination. The long baseline interferometry (LBI) yields, in conjunction with the spectroscopic solution, the distance to the system and thus the absolute stellar radius of the resolved K supergiant primary star, ζ Aur A. The secondary is not resolved by LBI, but its angular (and absolute) radius is found by fitting the model stellar flux plus an interstellar extinction model to the flux-calibrated GHRS data. We find $M_K = 5.8 \pm 0.2\ M_\odot$, $M_B = 4.8 \pm 0.2\ M_\odot$, $R_K = 148 \pm 3\ R_\odot$, and $R_B = 4.5 \pm 0.3 R_\odot$ for the masses and radii of the ζ Aur stars. We determine the distance to ζ Aur to be 261 ± 3 pc.

Additionally, we refine the stellar parameters of the B star secondary presented in the spectroscopic study of Bennett, Brown, & Linsky (1995). We also determine the effective temperature of the K star primary using values of the bolometric flux, angular diameter, and interstellar extinction derived in this study. The positions of the ζ Aur stars on the theoretical HR diagram are compared to current evolutionary model tracks, and the resulting good agreement provides a strong check of the internal self-consistency of this analysis and the accuracy of the theoretical models. The ζ Aurigae stars are confirmed to be coeval with an age of 80 ± 15 Myr.

Accepted by ApJ

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Solar Abstracts

Solar Astrophysics: An Overview

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In the last 20 years solar astrophysics has undergone a revolution with the measurement of solar oscillations and the development of helioseismology enabling us to probe the physical processes, internal structure and dynamics of the Sun. Further progress is imminent with the completion of the GONG network and the launch of SOHO. The oscillation frequencies give an increasingly tight constraint on the hydrostatic structure of the Sun, in reasonable agreement with models, but the low flux of solar neutrinos remains an outstanding problem, although, as I show, it is possible to obtain quite low neutrino fluxes from models that satisfy the helioseismic constraints.

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He I 10830Å Wing Asymmetry in Polar Coronal Holes: Evidence for Radial Outflows

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Imaging spectroscopy of the Sun, carried out across the the solar poles, yielded several thousand profiles of the He I 10830Å chromospheric absorption line with effective spatial pixels of 1.1 × 2 square arcsec. Profiles of He I 10830Å show the relative blue-wing absorption is stronger in the coronal holes than in the quiet Sun, creating an asymmetric profile indicative of mass outflow. Within the coronal holes, blue-shifted line wings are found where He I absorption is weak, corresponding to the center of supergranular cells. However, in the quiet Sun there is no line wing shift in supergranular centers. Spatially compact regions of strong red-wing absorption also occur across the disk. Within the polar coronal holes, the amplitude of the wing shift shows a linear dependence with cos θ (where the angle θ is measured with respect to an outward normal to the Sun's surface) suggesting that a radial outflow occurs with a characteristic speed of $\sim$ 8 km s^{-1}. These observations represent the first detection of systematic outflows near the chromosphere transition region interface that appear to mark the origin of the high speed wind acceleration from the solar surface.

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Active Region Electron Density And Dimensions From Fe XVII X-ray Lines

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The Fe XVII $2p^6\ {}^1S_0 - 2p^5\,3s\ {}^1P_1$ X-ray line at 15.015 Å is resonance-scattered in solar active region and flare spectra, as has been deduced by comparing theoretical intensities of lines in the Fe XVII $2p^6 - 2p^5 3l$ ($l = s$, d) arrays with intensities observed by the Flat Crystal Spectrometer (FCS) on the *Solar Maximum Mission*. We show that the amount of resonance scattering is strongly dependent on the heliocentric distance of the emitting region, disk regions showing much larger scattering than limb regions. Average values for electron density N_e and path length l can be derived for various heliocentric distances using the X-ray line intensities. We find $N_e \approx 10^9$ cm^{-3} and $l \approx 100\,000$ km (for region on the disk) to $N_e \approx 10^{11}$ cm^{-3} and $l \approx 1\,000$ km (region on the limb) for active region AR4787, as it rotated across the solar disk to the limb. These lengths appear to be consistent with FCS images. We note, from our findings, that the approximate extent of stellar X-ray active regions could be determined, if high-resolution Fe XVII or equivalent observations were available.

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Intermittent Solar Activity by an On-Off Dynamo

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We show that the alternation between intervals of cyclic activity and grand minima like the Maunder minimum in the 17th century, which is characteristic for the long-term variation of solar activity, can be desribed as on-off intermittency arising in a dynamo driven by the instability of magnetic flux tubes in the overshoot layer below the convection zone.

The combination of a threshold in field strength for dynamo action and random fluctuations due to magnetic fields from a turbulent convection zone dynamo leads to activity cycles with strong amplitude variations and the occasional appearance of grand minima of very low activity. The resulting pattern is in qualitative agreement with the long-term records of solar activity.

Accepted by A&A (Letters)

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Ph.D. Thesis Abstract

Über die Struktur von Solaren Poren

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Ph.D dissertation directed by: Egon-Horst Schröter

Ph.D degree awarded: April 1996

This thesis addresses the structure of solar pores. These small (1–5 arcsec) magnetic structures represent a crucial member in the loose chain of magnetic objects on the sun, flux tube - magnetic knot - pore - sunspot. The main interest in those pores is the fact that in this range of size, the magnetic structures start to change from a continuum intensity distinctly brighter than (flux tubes) or of equal value as the ambient unmagnetized photosphere (knots) to a continuum brightness of only some percent of the photospheric intensity (spots). Furthermore, although pores are dark, too, they differ from the larger spots in the lack of a penumbra. This peripheral part of spots, dominated by highly inclined flux regions of intermitting continuum intensity, only shows up for larger flux concentrations, therewith pointing out some change in the basic structure. It was the aim of the thesis to spot out those changes.

On that behalf, extensive observation campaigns were performed at the German Observing facilities at the Observatorio del Teide/Tenerife. Spectra of as many as 25 different spectral lines were taken, both magnetically insensitive ones (Landé-factor $g = 0$) as well as lines with high splitting. For those lines, the full Stokes vector was recorded. After careful data correction and reduction, an inversion code that implements the full radiative transfer equations was used to reveal the physical conditions of the magnetized plasma.

The results are as follows:

- The true continuum intensity shows a clear correlation with the size of the pore, smaller ones being brighter than larger ones. The average continuum brightness at 500nm is about 30%.
- The temperature, although lower than in the photosphere at deeper levels, equals or even exceeds the photospheric value in the temperature minimum some 250 km above $\tau = 1$. This predicts a center-to-limb variation of the continuum contrast where the pore becomes invisible near the solar limb. This is in agreement with recent observations.
- The thermal structure of the pore is not isotropic, the thermodynamic parameters change from the pores center, where the atmosphere is coolest, to the rim, where the radiative heating from the ambient hot photosphere leads to an increased temperature.

- The magnetic field strength is also related to the diameter of the pore, it increases with increasing size. Typical values measured in the height of formation of the used spectral lines are 1800 G for a pore of 2 arcsec in diameter and 2200 G for one of 3.5 arcsec.
- Although the field strength shows a decline towards the pores rim, after correction for the different atmospheric circumstances and therefore differing wilson depressions, the field strength seems to be constant within one given geometrical height in the atmosphere.
- There is a strong vertical gradient of the magnetic field strength of 3.5-4.5 G km^{-1}
- The inclination of the field lines with respect to the surface normal reach 45-60 degree at the rim, with a tendency for stronger inclinations for larger pores. A theoretical reflection, based on the derived vertical field gradient, also shows that these values are reasonable and furthermore that for pores as large as approx. 5 arcsec, the field lines should get nearly horizontal, therewith eventually triggering the formation of a penumbra.

Thesis-related Publications: Sol. Phys. 164, 311

Fundamental Stellar Properties: The Interaction Between Observation and Theory

A meeting to mark the 80th birthday of Emeritus Prof. R. Hanbury Brown

January 13 – 17, 1997

University of Sydney (Australia)

******** 1st Announcement ********

(Application submitted for IAU Symposium Status)

Principal Topics:

Observational data: distances, angular dimensions, spectra, flux distributions and calibration, oscillation frequencies and amplitudes (including asteroseismology). *Fundamental properties:* emergent fluxes, effective temperatures, masses, radii, gravities, luminosities, abundances. *Stellar atmospheres:* opacities, atomic constants, line broadening, atmospheric motions, chromospheres, magnetic fields. *Stellar structure:* opacities, boundary conditions, equation of state, convection, helium diffusion, rotation, ages. *Chemical evolution:* abundances, abundance anomalies, mass loss. *For all topics:* the emphasis will be on the critical assessment of the quality, accuracy, and prospects for improvement of the observational data and models, on the identification of outstanding problems in stellar astrophysics, and on the observational and theoretical targets and capabilities for their solution.

Scientific Organising Committee:

J. Davis (Chair) (Australia)
J. Andersen (Denmark)
Y. Balega (Russia)
B. Barbuy (Brazil)
M. Bessell (Australia)
C. Chiosi (Italy)
J. Christensen-Dalsgaard (Denmark)
R-P. Kudritzki (Germany)
D.Lambert (U.S.A.)
M. Spite (France)
D. Vandenberg (Canada)

Contact Information:

For more information please contact A. Booth (Chair, Local Organising Committee): *e-mail* `booth@physics.usyd.edu.au`; *Phone* (61) 2 351 3849 (please note (61) 2 9351 3849 from August 1996); *Fax* (61) 2 660 2903 (please note (61) 2 9660 2903 from August 1996). Or visit our Web page (`http://www.physics.usyd.edu.au/astron/first.html`) or use anonymous ftp from `ftp.physics.usyd.edu.au` in the directory `fsp97`.

Second mailing and call for papers are anticipated for mid-July 1996. Please register for the second mailing using either the Web page or by e-mail to `fsp97@physics.usyd.edu.au`.

Limited funds may be available to assist with travel and conference expenses in exceptional cases. In the first instance applicants should seek funding from all possible alternative sources. Please indicate when registering if you are likely to request assistance.

Brown Dwarfs and Extrasolar Planets

International Workshop

March 17 – 20, 1997

Puerto de la Cruz, Tenerife, Spain

******** 1st Announcement ********

For further information send an e-mail to *bdexp@iac.es* or consult our WWW page at *http://www.iac.es/bdexp/bdexp.html*

This is the first announcement for a workshop on *brown dwarfs and extrasolar planets* to be held in the resort city of Puerto de la Cruz (Tenerife, Spain) on March 17 – 20, 1997. The meeting is organized by the Instituto de Astrofísica de Canarias (IAC), which hosts the two international observatories located in the Canary Islands (Roque de los Muchachos at La Palma, and Teide at Tenerife).

Rationale

The rationale behind this meeting is to bring together specialists working in the areas related to research on substellar objects. The meeting covers observational and theoretical ingredients of this rapidly evolving field. The emphasis will be on recent developments at infrared and optical wavelengths and on the models of atmospheric and internal structure necessary for interpretation. A central issue will be the intercomparison of different observational techniques (direct imaging, interferometry, radial velocity, lensing, occultation). The implications of brown dwarfs and extrasolar planets for star formation and galactic structure will be addressed.

Topics

Invited reviews on the following topics will be given:

– Formation of free-floating brown dwarfs – Formation of substellar objects orbiting stars – Deep CCD searches – Infrared imaging – Gravitational microlensing – Coronography – Infrared Interferometry – High precision radial velocities – Occultations – Spectroscopic properties and tests – Rotation and activity – Evolution and structure of brown dwarfs and planets – Atmospheres – Luminosity and mass functions

In addition, contributed papers and posters will be presented. The organizing committee will select contributions for oral or poster presentation from the applications. There will be a limit of about 10 oral and 40 poster presentations.

Scientific Organizing Committee (SOC): Franca D'Antona (Rome), Richard Jameson (Leicester), Shri Kulkarni (Caltech), James Liebert (Arizona), Rafael Rebolo (IAC, chair), Jean Schneider (Meudon), Joe Silk (Berkeley), John Stauffer (Harvard) and Takashi Tsuji (Tokio).

Local Organizing Committee (LOC): Eduardo Martín, María Rosa Zapatero-Osorio, Rafael Rebolo.

Location

The meeting will take place in the new conference center adjacent to the Casino Taoro in Puerto de la Cruz. We expect most participants to stay in the hotels close to the conference center. Puerto de la Cruz is a seaside resort within 30 minutes drive of La Laguna (University town and site of IAC headquarters) and Santa Cruz (largest city in Tenerife, population 250,000), and only 15 minutes from the North airport. There are five flights daily between Tenerife and Madrid, and also direct connections with other Spanish and European cities. Transportation between the airport and the meeting location will be arranged.

Further information

This is the first announcement of the meeting. If you would like to receive further announcements, we ask you to consult our WWW page at *http://www.iac.es/bdexp/bdexp.html* and fill in the pre-registration form, or send an e-mail to *bdexp@iac.es*. The second announcement will be sent in late 1996. It will contain the agenda with the list of invited speakers, more detailed information about the logistics, proceedings, and the social program.

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. 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 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. 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` .