COOLNEWS

A RESEARCH NEWSLETTER DEDICATED TO COOL STARS AND THE SUN

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EDITOR'S NOTE: JUNE MAILING

Due to travel, the mailing date of the June issue is somewhat uncertain. It will most likely be mailed out in mid-June. The next call for abstracts will provide a more definite date. Keep those abstracts coming! Steve Skinner (ed.)

Stellar Abstracts

Doppler Imaging of Stellar Surface Structure XV. A Possible Detection of Differential Rotation and Local Meridional Flows on the Rapidly-Rotating Giant HD 218153 = KU Pegasi

M. Weber[1] **and K. G. Strassmeier**[1]

[1] Astrophysikalisches Institut Potsdam, An der Sternwarte 16, D-14482 Potsdam, Germany

Time-resolved Doppler images of the rapidly rotating, but long-period (25 days), giant KU Pegasi show several cool low-to-medium latitude spots as well as an asymmetric polar feature. The average spot temperature is about 700 K below the photospheric temperature of 4700 K. KU Peg is one of the most massive, and currently the most evolved, late-type star with a Doppler image. We obtained two independent images from two consecutive stellar rotations covering 50 nights with a total of 43 spectra. From a cross-correlation analysis of the two maps, we detect systematic longitudinal and latitudinal shifts that we tentatively interpret as latitude-dependent differential rotation and local meridional flows, respectively. The differential-rotation pattern is more complex than on the Sun, but on average in the sense that the poles rotate slower than the stellar equator, i.e. in the same direction and also of the same order than on the Sun. The latitudinal shifts are of the order of 0.4° day^{-1} towards the stellar pole and occur at longitudes of around 40° and 330°. The residual Hα profiles show a stationary emission component at rest wavelength and a blue-shifted absorption. The latter suggests an outward pointed velocity field with a flow velocity of approximately 35 km s^{-1}.

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OH 1.563μm Absorption From Starspots on Active Stars

Douglas O'Neal[1], James E. Neff[2], Steven H. Saar[3], and Jonathan K. Mines[4]

[1] Natural Sciences, West Liberty State College, West Liberty, WV 26074 USA
[2] Dept. of Physics and Astronomy, College of Charleston, Charleston, SC 29424 USA
[3] Harvard-Smithsonian Center for Astrophysics, 60 Garden Street, Cambridge, MA 02138 USA
[4] Dept. of Physics and Astronomy, University of Pittsburgh, Pittsburgh, PA 15260 USA

We present results from a study of starspots on active stars using a pair of vibrational-rotational absorption lines of the OH molecule near 1.563μm. We detect excess OH absorption due to dark, cool starspots on several active stars of the RS CVn and BY Dra classes. Our results for the single-lined spectroscopic binaries II Pegasi, V1762 Cygni, and λ Andromedae augment those from a previous study that used a less sensitive detector. In this study, we were able for the first time to use molecular absorption features to measure starspot properties on double-lined systems. Measuring the equivalent width of these OH lines in inactive giant and dwarf stars of spectral types G, K, and M, we find that the total equivalent width of the line pair increases approximately linearly as effective temperature decreases from 5000 K to 3000 K. We measure starspot filling factors by fitting the spectra of active stars with linear combinations of comparison star spectra representing the spot and non-spot regions of the star.

Submitted to AJ

For preprints contact: onealdb@wlsc.edu

Photometric Variability in the Ultracool Dwarf BRI 0021-0214: Possible Evidence for Dust Clouds

Eduardo L. Martin[1], Maria Rosa Zapatero Osorio[2], and Harry J. Lehto [3]

[1] Institute for Astronomy, University of Hawaii at Manoa, 2680 Woodlawn Drive, Honolulu HI 96822 USA
[2] Division of Geological and Planetary Sciences, California Institute of Technology, MS 150-21, Pasadena, CA 91125 USA
[3] Tuorla Observatory, Turku University, Väisäläntie 20, FI-21500 Piikkiö, Finland

We report CCD photometric monitoring of the nonemission ultracool dwarf BRI 0021−0214 (M9.5) obtained during 10 nights in 1995 November and 4 nights in 1996 August, with CCD cameras at 1 m class telescopes on the observatories of the Canary Islands. We present differential photometry of BRI 0021−0214, and we report significant variability in the I-band light curve obtained in 1995. A periodogram analysis finds a strong peak at a period of 0.84 day. This modulation appears to be transient because it is present in the 1995 data but not in the 1996 data. We also find a possible period of 0.20 day, which appears to be present in both the 1995 and 1996 datasets. However, we do not find any periodicity close to the rotation period expected from the spectroscopic rotational broadening ($\leq$0.14 day). BRI 0021−0214 is a very inactive object, with extremely low levels of H_α and X-ray emission. Thus, it is unlikely that magnetically induced cool spots can account for the photometric variability. The photometric variability of BRI 0021−0214 could be explained by the presence of an active meteorology that leads to inhomogeneous clouds on the surface. The lack of photometric modulation at the expected rotational period suggests that the pattern of surface features may be more complicated than previously anticipated.

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For preprints contact: ege@ifa.hawaii.edu

For preprints via ftp or WWW: astro-ph/0104377

The Electron Pressure in the Outer Atmosphere of ϵ Eri (K2 V)

C. Jordan[1], S. A. Sim[1], A. D. McMurry[2] and M. Aruvel[3]

[1] Department of Physics (Theoretical Physics), University of Oxford, 1 Keble Road, Oxford, OX1 3NP, UK
[2] Institute of Theoretical Astrophysics, University of Oslo, P.O. Box 1029, Blindern, N-0315 Oslo, Norway
[3] St. Catherine's College, Oxford, OX1 3UJ, UK

Observations of ϵ Eri (K2 V) have been made with the Space Telescope Imaging Spectrograph on the Hubble Space Telescope. The spectra obtained show a number of emission lines which can be used to determine, or place limits on, the electron density and pressure. Values of the electron pressure are required in order to make quantitative models of the transition region and inner corona from absolute line fluxes, and to constrain semi-empirical models of the chromosphere. Using line flux ratios in Si III and O IV a mean electron pressure of $P_e = N_e T_e = 4.8 \times 10^{15}$ cm^{-3} K is derived. This value is compatible with lower and upper limits to P_e found from flux ratios in C III, O V and Fe XII. Some inconsistencies which may be due to small uncertainties in the atomic data used are discussed.

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For preprints contact: c.jordan1@physics.ox.ac.uk

Chromospherically Active Stars. XIX. A Reexamination of the Variability of HD 10909 = UV Fornacis

Francis C. Fekel[1], Gregory W. Henry[1], Keinon Brooks[1] and Douglas S. Hall[2]

[1] Center of Excellence in Information Systems, Tennessee State Univ., 330 Tenth Ave. North, Nashville, TN 37203
[2] Dyer Observatory, Vanderbilt Univ., Nashville, TN 37235

We have obtained new spectroscopy and photometry of the K0 IV, chromospherically active, single-lined spectroscopic binary HD 10909. Those observations show that the previously reported orbital and light variability periods are incorrect. HD 10909 has an orbital period of 30.1067 days and an eccentricity of 0.499. Its rotation period of 64.1 days is more than twice as long as its orbital period. The primary is situated near the base of the first-ascent red-giant branch. Thus, its asychronous rotation is likely the result of its recent evolution through the Hertzsprung gap, combined with its relatively long orbital period and high eccentricity.

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For preprints contact: fekel@evans.tsuniv.edu

Dust Shell of Symbiotic Nova V1016 Cygni

M.B.Bogdanov[1], and Olga G.Taranova[2]

[1] Saratov State University, Bolschaya Kazachiya st. 112a, Saratov, 410026 Russia
[2] Sternberg Astronomical Institute, Universitetskii pr. 13, Moscow, 119899 Russia

The variations of light and color of V1016 Cyg are investigated based on the data of our photometric observations in visible and near infrared acquired over many years. The models of a spherically symmetric dust shell were fitted to low resolution mid-infrared stellar spectra observed by the IRAS (the middle 1983) and the ISO (November 5, 1996) using the DUSTY (version 2.0) code. For the grain size distribution we adopted the standard MRN model. The dust composition was accepted to be the warm silicate, and the grain number density $n(r) \propto r^{-2}$. Two extreme cases of dust heating were examined: by the Mira variable only (model 1), and by a summary radiation of both hot and cold component ignoring the absorption of short-wave quanta in a gas envelope (model 2). It is shown that the observational data can be well represented only by the model 1. The derived parameters of this model are (in brackets from the ISO data): the luminosity of the Mira variable, 9000L$_\odot$; the effective temperature, 2600 K; the optical depth of the dust shell at wavelength 0.55 micron, 11.0 (9.5); the inner shell radius, $5.30(5.21) \times 10^{14}$ cm; the temperature of the dust at inner radius, 700 (700) K; the distance, 3.4 (3.4) kpc; the velocity of the stellar wind, 8.2 (8.4) km s^{-1}; the upper limit of the mass of a central body, 1.7(1.7)M$_\odot$; the total mass-loss rate, $1.2(1.1) \times 10^{-5}$M$_\odot$ yr^{-1}. The values of the dust shell parameters as well as the stellar wind parameters infered from the IRAS data are close to the values from the ISO data. It is possible that this fact reflects a slow evolution of the hot component of V1016 Cyg.

Accepted by Astronomy Reports *For preprints contact*: taranova@sai.msu.ru

Doppler Imaging of Stellar Surface Structure. XV. A Time-series Analysis of the Moderately-Rotating K1-Giant σ Geminorum

Zs. Kővári[1], K.G. Strassmeier[2], J. Bartus[1], A. Washuettl[2], M. Weber[2] and J.B. Rice[3]

[1] Konkoly Observatory of the Hungarian Academy of Sciences, H-1525 Budapest, Box 67., Hungary
[2] Astrophysikalisches Institut Potsdam, An der Sternwarte 16, D-14482 Potsdam, Germany
[3] Department of Physics, Brandon University, Brandon, Manitoba R7A 6A9, Canada

We present a simultaneous photometric and spectroscopic imaging analysis of the long-period RS CVn binary σ Gem, covering 3.6 consecutive rotation cycles with high time resolution. From six overlapping but consecutive Doppler maps we trace the evolution of individual spots throughout the time range covered. All spots group either along a band at approximately +45° latitude and a width of 30°, or appear centered at the equator. No polar spot is detected. We did not find a conclusive migration pattern from the cross-correlation maps from one rotation to the next and attribute this to a masking effect of short-term spot changes.

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NICS–TNG Low–resolution 0.85–2.45 μm Spectra of L-Dwarfs: A Near-Infrared Spectral Classification Scheme for Faint Dwarfs

L. Testi[1], F. D'Antona[2], F. Ghinassi[3], J. Licandro[3], A. Magazzù[3,4], R. Maiolino[1], F. Mannucci[5], A. Marconi[1], N. Nagar[1], A. Natta[1], E. Oliva[1,3]

[1]Osservatorio Astrofisico di Arcetri, Largo E. Fermi 5, I-50125 Firenze, Italy
[2]Osservatorio Astronomico di Roma, via Frascati 33, I-00044, Roma, Italy
[3]Centro Galileo Galilei & Telescopio Nazionale Galileo, P.O. Box 565, E-38700, Santa Cruz de La Palma, Spain
[4]Osservatorio Astrofisico di Catania, Via S. sofia 78, I-95123 Catania, Italy
[5]CAISMI-CNR, Largo E. Fermi 5, I-50125 Firenze, Italy

We present complete near-infrared (0.85–2.45 μm), low-resolution ($\sim$100) spectra of a sample of 26 disk L-dwarfs with reliable optical spectral type classification. The observations have been obtained with NICS at the TNG using a prism-based optical element (the Amici device) that provides a complete spectrum of the source on the detector. Our observations show that low-resolution near-infrared spectroscopy can be used to determine the spectral classification of L-dwarfs in a fast but accurate way. We present a library of spectra that can be used as templates for spectral classification of faint dwarfs. We also discuss a set of near-infrared spectral indices well correlated with the optical spectral types that can be used to accurately classify L-dwarfs earlier than L6.

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Ultraviolet Eclipse Observations and Fundamental Parameters of the Binary HR 2554 (G6 II + A1 V)

Alexander Brown[1], Philip D. Bennett[1], Robert Baade[2], Thomas Kirsch[2], Dieter Reimers[2], Artie P. Hatzes[3], and Martin Kürster[4]

[1] CASA, UCB 389, University of Colorado, Boulder, CO 80309-0389, USA
[2] Hamburger Sternwarte, Universität Hamburg, Gojensbergsweg 112, 21029 Hamburg, Germany
[3] Thüringer Landessternwarte Tautenburg, Sternwarte 5, D-07778 Tautenburg, Germany
[4] European Southern Observatory, Casilla 19001, Santiago 19, Chile

HR 2554 is an eclipsing binary system that contains a G6 II primary star and an A dwarf secondary. We have obtained ultraviolet spectra during two eclipses of HR 2554 in 1994 March/April and 1995 May using the HST Goddard High Resolution Spectrograph (GHRS) to study the atmospheric structure of the primary and to better establish the

properties of the binary system. We have determined accurate orbital elements for both components using new and existing optical spectra for the primary and the GHRS spectra for the secondary, in conjunction with eclipse photometry presented by Schröder & Hünsch (1992, A&A, 257, 219). The derived orbital period is 195.258 ± 0.003 days, the derived radii are $31.3\pm0.9\ R_{\odot}$ and $1.9\pm0.1\ R_{\odot}$, and the derived masses are $3.14\pm0.17\ M_{\odot}$ and $1.98\pm0.11\ M_{\odot}$, respectively. The resulting positions of HR 2554 in the H-R diagram are somewhat inconsistent with the independent evolution of the component stars; in particular, the G-star primary is overluminous, and too blue, for its mass. The difficulties might be overcome if the metallicity of the system were unusually low ([Fe/H] ~ -1), but this possibility appears to be ruled out by the [Fe/H]= -0.04 determination of Eggen (1989, PASP 101, 54). We suspect HR 2554 has undergone a more complicated evolutionary history, involving mass transfer, than has been considered previously.

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Solar Abstracts

Solar Mn I 5432/5395Å Line Formation Explained

J.G. Doyle[1], D. Jevremović[1,2], C.I. Short[3], P.H. Hauschildt[4], W. Livingston[5], I. Vince[2]

[1]Armagh Observatory, Armagh BT61 9DG, N. Ireland
[2]Astronomical Observatory, Volgina 7, 11050 Belgrade, Yugoslavia
[3]Dept of Phys, Charles E. Schmidt College of Science, Florida Atlantic University, Boca Raton, FL, 33431, USA
[4]Dept of Phys & Astron and Center for Simulational Physics, University of Georgia, Athens, GA, 30602, USA
[5]National Solar Observatory, P.O. Box 26732, Tucson, AZ 85726, USA

We present a solution for the long standing problem concerning the 'chromospheric' behaviour of the Mn I 5395/5432Å lines in the solar spectrum using multi-line/multi-species NLTE modelling. Using comprehensive spectral line formation modelling, we show that the Mn I lines are very sensitive to optical pumping in a transition which overlaps with Mg II k. It therefore follows that one has to be careful with the choice of lines as temperature indicators and for the determination of the Mn abundances although on the other hand, due to the formation process of these lines they may be useful as a solar and stellar activity diagnostic.

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Modelling of Explosive Events in the Solar Transition Region in a 2D Environment. Part I. General Reconnection Jet Dynamics

I. Roussev[1], K. Galsgaard[2] R. Erdélyi[3], J.G. Doyle[1]

[1]Armagh Observatory, Armagh BT61 9DG, N. Ireland
[2]School of Mathematics and Statistics, University of St. Andrews, St Andrews, Fife KY16 9SS, Scotland
[3]Space & Atmosphere Research Center, Dept. of Applied Mathematics, University of Sheffield, Hicks Building, Hounsfield Road, Sheffield, S3 7RH, England

The aim of the present study is to investigate the reconnection jets formed during the process of magnetic flux cancellation in the physical environment of the solar transition region. The emission properties of these jets are then computed for two resonance transition region lines, C IV 1548.2Å and O VI 1031.9Å, under the assumption of non-equilibrium ionization. The numerical modelling involves 2-dimensional (2D) dissipative, radiative, nonlinear magnetohydrodynamics. The nonlinear anisotropic thermal conduction, radiative losses, and volumetric heating are taken into account in order to assess their role in the physical situation examined. This work is a continuation of previous related simulations where small-scale energy depositions were modelled in 1D radiative hydrodynamics. Having an X-point reconnection in the mid-transition region gives blue-shifts of the order of ~ 100 km s^{-1}, however, the red-shift can be up to one order of magnitude less.

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The Nature of Network Oscillations

D. Banerjee[1], E. O'Shea[2], J.G. Doyle[3], M. Goossens[1], B. Fleck[4]

[1]Centre for Plasma Astrophysics, Katholieke Universiteit Leuven, Celestijnenlaan 200B, 3001 Heverlee, Belgium
[2]ESTEC, Solar System Division, Keplerlaan 1, NL-2201 AZ, Noordwijk, The Netherlands
[3]Armagh Observatory, Armagh BT61 9DG, N. Ireland
[4]ESA Space Science Department, NASA/GSFC Mailcode 682.3, Greenbelt, MD 20771, USA

We examine time-series spectral data obtained from the Coronal Diagnostic Spectrometer (CDS) and the Solar Ultraviolet Measurements of Emitted Radiation instrument (SUMER) onboard the Solar Heliospheric Observatory (SoHO) spacecraft, in the period 10–31 July 1996. Observations were obtained in lines, ranging in temperature from 12,000 K to 10^6 K, covering the low chromosphere to the corona. We will report here on the time series analysis, using wavelet methods, of small individual network regions in the quiet Sun. The wavelet analysis allows us to derive the duration as well as the periods of the oscillations. The statistical significance of the oscillations was estimated by using a randomisation method. The oscillations are considered to be due to waves, which are produced in short bursts with coherence times of about 10-20 minutes. The low chromospheric and transition region lines show intensity and velocity power in the 2-4 mHz range. The coronal line Mg X does not show power in this range. The observed 2-4 mHz network oscillations can be interpreted in terms of kink and sausage waves propagating upwards along thin magnetic flux tubes. The kink waves can be generated by random foot-point motions, driven by exploding granules, at the photospheric level. As they propagate within flux tubes, their amplitude grows exponentially with height and becomes non-linear. The waves can thereby undergo a mode transformation and become sausage type waves, which are more easily detected on the disk.

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The Sun as an X-ray Star: III. Flares

F. Reale[1], G. Peres[1] and S. Orlando[2]

[1] Dip. Scienze Fisiche & Astronomiche - Sez. Astronomia - Univ. di Palermo, Piazza del Parlamento 1, I–90134, Italy
[2] Osservatorio Astronomico, Piazza del Parlamento 1, I–90134 Palermo, Italy

In previous works we have developed a method to convert solar X-ray data, collected with the Yohkoh/SXT, into templates of stellar coronal observations. Here we apply the method to several solar flares, for comparison with stellar X-ray flares. Eight flares, from weak (GOES class C5.8) to very intense ones (X9) are selected as representative of the flaring Sun. The emission measure distribution vs. temperature, EM(T), of the flaring regions is derived from Yohkoh/SXT observations in the rise, peak and decay of the flares. The EM(T) is rather peaked and centered around $T \approx 10^7$ K for most of the time. Typically, it grows during the rise phase of the flare, and then it decreases and shifts toward lower temperatures during the decay, more slowly if there is sustained heating. The most intense flare we studied shows emission measure even at very high temperature ($T \approx 10^8$ K). Time-resolved X-ray spectra both unfiltered and filtered through the instrumental responses of the non-solar instruments ASCA/SIS and ROSAT/PSPC are then derived. Synthesized ASCA/SIS and ROSAT/PSPC spectra are generally well fitted with single thermal components at temperatures close to that of the EM(T) maximum, albeit two thermal components are needed to fit some flare decays. ROSAT/PSPC spectra show that solar flares are in a two-orders of magnitude flux range ($10^6 - 10^8$ erg cm^{-2} s^{-1}) and a narrow PSPC hardness ratio range, however higher than that of typical non-flaring solar-like stars.

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Plumes and Oscillations in the Sunspot Transition Region

P. Maltby[1], N. Brynildsen[1], O. Kjeldseth-Moe[1] and K. Wilhelm[2]

[1] Institute of Theoretical Astrophysics, University of Oslo, P.O. Box 1029 Blindern, 0315 Oslo, Norway
[2] Max-Planck-Institut für Aeronomie, 37191 Katlenburg-Lindau, Germany

The suggestion that sunspot transition region oscillations are a typical feature of the sunspot plumes is examined. The present observations show 3 minute oscillations in the umbra that end at the umbral rim. We find that sunspot plumes located above the umbra show these oscillations, in contrast to plumes above the penumbra. These two findings suggest that the oscillations may be a property of the umbral transition region.

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

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Dynamics of the Solar Granulation – VII. A Nonlinear Approach

A. Nesis[1], R. Hammer[1], M. Roth[1], and H. Schleicher[1]

[1] Kiepenheuer-Institut für Sonnenphysik, Schöneckstr. 6, 79104 Freiburg, Germany

We investigate the attractor underlying the granular phenomenon by applying nonlinear methods to series of spectrograms from 1994 and 1999. In the three-dimensional phase space spanned by intensity, Doppler velocity, and turbulence (line broadening), the granulation attractor does not fill the entire phase space, as expected from the high Reynolds and Rayleigh numbers of the photospheric plasma, but rather shows a highly structured form. This could be due to the correlations between intensity, turbulence, and velocity, which represent also the Reynolds stress. To obtain insight into the dimensionality of the attractor, we use the time lag method, a nonlinear method that enables us to get information about the underlying attractor of a dynamical system (granulation) from the measurement of one physical quantity only. By applying this method to the observed Doppler velocities, we show that the granulation attractor can be described by three independent variables. The dimension of the granulation attractor seems to be independent of the appearance of big granules and shear flow. Furthermore, the power analysis of the Doppler velocity shows power down to the spatial resolution of the instrument (0.3 arcsec). In order to decide whether the power at the smallest scales is real or noise, we use again the time lag method in combination with either a high pass digital or wavelet filter, which filters out the large wave numbers. It appears that the power at the smallest scales represents a real signal.

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For preprints contact: nesis@kis.uni-freiburg.de

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Dynamics of the Solar Granulation – On the Time Variation of the Granular Flow

A. Nesis[1], R. Hammer[1], M. Roth[1], H. Schleicher[1], D. Soltau[1], and J. Staiger[1]

[1] Kiepenheuer-Institut für Sonnenphysik, Schöneckstr. 6, 79104 Freiburg, Germany

The emergence and evolution of large granules shows the granular dynamics particularly well. We therefore investigate the time dependence of the convective flows within a regular and an exploding granule. The observational material for this study was taken at the center of the solar disk with the German VTT in Izaña (Tenerife, Spain) during an observing campaign in the year 1994. It consists of series of spectrograms of high spatial resolution, which were digitized and processed with wavelet techniques. Among other features, our data show the dynamical portrait of a regular and an exploding granule. We can follow their temporal evolution over more than 12 min. Using absorption lines of different strength we are able to see the dynamical change of both granules at several heights within the first 200 km above $\tau_{5000} = 1$. The observations reveal significant changes of the convective flow of both granules over time as well as over height, which are discussed in detail.

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For preprints contact: nesis@kis.uni-freiburg.de

For preprints via ftp or WWW: http://www.kis.uni-freiburg.de/~nesis/Dynamics_SP01.ps.gz

Waiting Time Distributions in Lattice Models of Solar Flares

James P. Norman[1,2], Paul Charbonneau[1], Scott W. McIntosh[1,3], and Han-Li Liu[1]

[1]High Altitude Observatory, National Center for Atmospheric Research, P.O. Box 3000, Boulder, CO 80307, USA
[2]Department of Physics, University of Newcastle upon Tyne, Newcastle upon Tyne, NE1 7RU, United Kingdom
[3]ESA Space Science Department, NASA/GSFC, Mailcode 682.3, Greenbelt, MD 20771

It has recently been argued that the distribution of waiting times between successive solar flares is incompatible with the prediction of lattice models, which interpret flares as avalanches of magnetic reconnection events within a stressed magnetic structure, driven to a state self-organized criticality by stochastic motions of the photospheric magnetic footpoints. Inspired by a suggestion recently made by Wheatland (2000, ApJ, 536, L109), we construct modified lattice models driven by a nonstationary random process. The resulting models have frequency distributions of waiting times that include a power law tail at long waiting times, in agreement with observations. One model, based on a random walk modulation of an otherwise stationary driver, yields an exponent for the power law tail equal to 2.51 ± 0.16, in reasonable agreement with observational inferences. This power law tail survives in the presence of noise and a detection threshold. These findings lend further support to the avalanche model for solar flares.

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For preprints contact: paulchar@hao.ucar.edu

The Extreme-Ultraviolet Structure and Properties of a Newly Emerged Active Region

Peter T. Gallagher[1], Kenneth J. H. Phillips[2], Leongwoo Lee[3], Francis P. Keenan[4] and David J. Pinfield[4]

[1] Big Bear Solar Observatory, New Jersey Institute of Technology, 40386 North Shore Lane, Big Bear City, CA 92314, U.S.A.

[2] Space Science Department, Rutherford Appleton Laboratory, Chilton, Didcot, Oxon. OX11 0QX, U.K.

[3] Center for Solar Research, Physics Department, New Jersey Institute of Technology, Newark, NJ 07030, U.S.A.

[4] Department of Pure and Applied Physics, The Queen's University of Belfast, Belfast, BT7 1NN, Northern Ireland.

The structure and properties of a newly emerged solar active region (NOAA 7985) are discussed using the Coronal Diagnostic Spectrometer (CDS) and the Extreme-ultraviolet Imaging Telescope (EIT) onboard the *Solar and Heliospheric Observatory* (SOHO). CDS obtained high-resolution EUV spectra in the 308-381 Å and 513-633 Å wavelength ranges, while EIT recorded full-disk EUV images in the He II (304 Å), Fe IX/X (171 Å), Fe XII (195 Å) and Fe XV (284 Å) bandpasses. Electron density measurements from Si IX, Si X, Fe XII, Fe XIII and Fe XIV line ratios indicate the region consists of a central high density core with peak densities of the order of 1.2×10^{10} cm^{-3}, which decrease monotonically to $\sim 5.0 \times 10^{8}$ cm^{-3} at the active region boundary. The derived electron densities also vary systematically with temperature. Electron pressures as a function of both active region position and temperature were estimated using the derived electron densities and ion formation temperatures, finding the constant pressure assumption to be an unrealistic simplification. Indeed, the active region is found to have a high pressure core (1.3 $\times 10^{16}$ cm^{-3} K) which falls to 6.0×10^{14} cm^{-3} K just outside the region. CDS line ratios from different ionization stages of iron, specifically Fe XVI (335.4 Å) and Fe XIV (334.4 Å), were used to diagnose plasma temperatures within the active region. Using this method, peak temperatures of 2.1×10^{6} K were identified. This is in good agreement with electron temperatures derived using EIT filter-ratios and the two-temperature model of Zhang et al. The high temperature emission is confined to the active region core, while emission from cooler (1-1.6) $\times 10^{6}$ K lines originates in a system of loops visible in EIT 171 Å and 195 Å images. Finally, the three-dimensional geometry of the active region is investigated using potential field extrapolations from a Kitt Peak magnetogram. The combination of EUV and magnetic field extrapolations extends the 'core-halo' picture of active region structure to one in which the core is composed of a number of compact coronal loops which confine the hot, dense, high pressure core plasma, while the halo emission emerges from a system of cooler and more extended loops.

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Mesogranulation and Turbulence in Photospheric Flows

J. K. Lawrence[1], A. C. Cadavid[1] and A. Ruzmaikin[2]

[1] Dept. of Physics and Astronomy, California State University, Northridge, CA 91330-8268 USA
[2] Jet Propulsion Laboratory, 4800 Oak Grove Drive, Pasadena, CA 91109 USA

Below the scale of supergranules we find that cellular flows are present in the solar photosphere at two distinct size scales, approximately 2 Mm and 4 Mm, with distinct characteristic times. Simultaneously present in the flow is a non-cellular component, with turbulent scaling properties and containing 30 % of the flow energy. These results are obtained by means of wavelet spectral analysis and modeling of vertical photospheric motions in a 2-hour sequence of 120 SOHO/MDI, high resolution, Doppler images near disk center. The wavelets permit detection of specific local flow patterns corresponding to convection cells.

Accepted by Solar Physics

For preprints contact: jlawrenc@galileo.csun.edu

For preprints via ftp or WWW: http://xxx.lanl.gov/abs/astro-ph/0104354

On the Relation Between Total Irradiance and Radius Variations

J. Pap [1], J.P. Rozelot[2], S. Godier[2], and F. Varadi [3]

[1] Goddard Space Flight Center, Code 680.0, Greenbelt, MD 20771, USA and UCLA, Department of Physics, 90095-1562, Los Angeles
[2] OCA/CERGA, Avenue Copernic, 06 130 Grasse, France
[3] UCLA, Department of Physics, 90095-1562, Los Angeles

We use Singular Spectrum Analysis (SSA) to analize total solar irradiance variations and CERGA radius measurements. Total solar irradiance has been monitored from space for nearly two decades, whilst ground-based radius measurements are available as a coherent time series from 1975. We compare these indicators to try to understand the origin of energy production inside the Sun. One of the main objectives was to assess the reality of the observed variations of the Sun's radius by distinguishing the signal from the noise. Two approaches were used: one using SSA on ground-based data averaged over 90 days, in order to smooth the signal (especially over periods when no data was obtained, mainly in winter time); the second repeats the analysis on individual measurements corrected by reporting data to the zenith. As expected, the level of noise is higher in the first case and the reconstructed noise level, which is large, indicates the difficulty in ascertaining the solar origin in the apparent variability of the solar radius. It is shown from the reconstructed components that the main variation in amplitude (over 930 days) is pronounced during the first part of the measurements and seems to disappear after 1988. There is also a variation with a periodicity of 1380 days, of lower amplitude than that the shorter component. In both cases, these variations disappear during the rising portion of cycle 23. The first reconstructed component shows that total irradiance varies in parallel with the solar cycle, being higher during maximum activity conditions. The reconstructed radius trend indicates that the solar radius was higher during the minimum of solar cycle 21, but its decrease with the rising activity of cycle 23 is less obvious. The observed value of the solar radius increased by about 0.11 arc sec from the maximum of cycle 21 to the minimum between cycles 21 and 22. Most importantly, we report a long-term radius variation which increased from the maximum of cycle 21 to minimum by about 0.015%, while a smaller decrease (around 0.01%) is seen from the minimum of cycle 21 to the maximum of cycle 22. This study indicates need for measurements of the degree of the radius changes taken from space, together with measurements of the phase relation of the total irradiance.

Accepted by A&A

For preprints contact: rozelot@obs-azur.fr

Intensification of Magnetic Fields by Conversion of Potential Energy

M. Rempel[1] and M. Schüssler[1]

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

A strongly super-equipartition magnetic field strength of the order of 10 T (10^5 G) has been inferred at the bottom

of the solar convection zone. We show that the 'explosion' of weak magnetic flux tubes, a sudden loss of pressure equilibrium in a flux loop rising through the superadiabatically stratified convection zone, provides a mechanism leading to a such strong field: the flow of high-entropy material out of the exploded loop leads to a significant intensification of the magnetic field in the underlying flux sheet at the bottom. In contrast to the amplification by differential rotation, this process converts potential energy of the stratification into magnetic energy and is thus not dynamically limited by the back-reaction on the flow field via the Lorentz force.

Accepted by ApJ Letters

For preprints contact: rempel@linmpi.mpg.de

Radiative Transfer Abstracts

Multi-level Radiative Transfer with Partial Frequency Redistribution

Han Uitenbroek[1]

[1]National Solar Observatory/Sacramento Peak, P.O. Box 62, Sunspot, NM 88349

A multi-level accelerated lambda iteration (MALI) method for radiative transfer calculations with partial frequency redistribution (PRD) is presented. The method, which is based on Rybicki & Hummer's (1992) complete frequency redistribution (CRD) formalism with full preconditioning, consistently accounts for overlapping radiative transitions. Its extension to PRD is implemented in a very natural way through the use of the Ψ operator operating on the emissivity rather than the commonly used Λ operator which operates on the source function. Apart from requiring an additional inner computational loop to evaluate the PRD emission line profiles with fixed population numbers, implementation of the presented method requires only a trivial addition of computer code. Since the presented method employs a diagonal operator, it is easily extended to different geometries. Currently, it has been implemented for one-, two-, and three-dimensional Cartesian grids, and spherical symmetry. In all cases the speed of convergence with PRD is very similar to that in CRD, with the former sometimes even surpassing the latter. Sample calculations exhibiting the favorable convergence behavior of the PRD code are presented in the case of the Ca II H and K lines, the Mg II h and k lines and the hydrogen Lyman α and β lines in a one-dimensional solar model, and the Ca II resonance lines in a two-dimensional flux-sheet model.

Accepted by ApJ

For preprints contact: huitenbroek@sunspot.noao.edu

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UPCOMING MEETING

Mini-Symposium on MAGNETIC ACTIVITY IN STELLAR EVOLUTION

September 13 - 14, 2001

at the Joint European and National Astronomical Meeting for 2001 (JENAM 2001)
Munich, Germany

This is the announcement for the Mini-Workshop 'Magnetic Activity in Stellar Evolution' (MS-7) to be held within the framework of the Joint European and National Astronomical Meeting JENAM 2001. JENAM 2001 will be held in Munich (Germany) from Sep 10-15 2001 jointly with the 75th Annual Assembly and International Scientific Meeting of the Astronomische Gesellschaft (AG).

Scientific Program

The Mini-Symposium 'Magnetic Activity in Stellar Evolution' aims at bringing together the different branches of research related to stellar magnetic activity from the pre-main sequence to the post-main sequence, comprising observations in all relevant wavelength bands and theoretical models. We would like to encourage in particular young astronomers to use this forum to present recent work on one or more of the following object categories and scientific topics:

- Magnetically active stars at different stages of evolution: single stars, binaries, open clusters, star forming regions
- The Sun (in the context of the solar-stellar connection)
- Star formation and stellar evolution studies related to magnetic fields
- Magnetic fields and the stellar environments (accretion, ionization, outflows, jets, winds, planetary systems)

Scientific Organizing Committee for MS-7

B. Stelzer (MPE Garching, Germany), N. Grosso (MPE Garching, Germany), F. Favata (ESTEC Nordwijk, Netherlands), M. Guedel (PSI Villigen, Switzerland), G. Micela (OA Palermo, Italy), T. Montmerle (CEA Saclay, France), S. Sciortino (OA Palermo, Italy), K. Strassmeier (AI Potsdam, Germany)

Important Dates

Deadline for paper and poster abstracts: 13 July 2001

Further Information

News concerning the Mini-Symposium MS-7 'Magnetic Activity in Stellar Evolution' can be accessed at
http://www.xray.mpe.mpg.de/~stelzer/jenam_ms7.html

For more information regarding the JENAM 2001 meeting in general see

http://www.MPA-Garching.MPG.DE/english/conferences/jenam01/

This website provides also information regarding financial assistance, registration fee, accommodation and facilities. For additional questions please contact:

B. Stelzer (stelzer@mpe.mpg.de).

JOB OPENING

Postdoctoral Positions (Cosmic Magnetic Fields)
Astrophysical Institute
Potsdam, Germany

We invite applications for two full-time postdoctoral research positions at the Astrophysical Institute Potsdam (AIP) starting spring/summer 2001. The initial appointment is for two years with the possibility of an extension of another year. Salary is according to BAT IIa-O, i.e. approx. 3,100.– DM per month (13 times).

The AIP is a research foundation with a close link to the University of Potsdam and a member of the Wilhelm Gottfried Leibnitz Gesellschaft and carries out basic astronomical research in a variety of fields (see http://www.aip.de). The current openings are for research in Stellar Activity with special emphasis on high-resolution spectroscopy, Doppler imaging, spectropolarimetry, molecular and atomic lines in model atmospheres, and coding for parallel supercomputing in Fortran-90 and/or C. Both observers and theoreticians are encouraged to apply.

The AIP is involved in the construction of a 1.2m robotic spectroscopic telescope for stellar activity monitoring on Tenerife and the applicants are invited to participate in its scientific use. Access to all ESO facilities, including the VLT, and later to the LBT is possible. Inhouse computing facilities include a 16 processor Hitachi SR800, a 4 processor Cray J90, an Alpha-Unix network, Suns, and many PC/Linux machines.

Please send your application to:

Prof. Dr. K. G. Strassmeier, Director
Astrophysical Institute Potsdam
An der Sternwarte 16
D-14482 Potsdam, Germany
kstrassmeier@aip.de
phone +49-331-7499-295
fax +49-331-7499-200
http://www.aip.de/groups/activity

JOB OPENING

Postdoctoral Research Assistant - RS1A
Dept. of Physics
Univ. of Oxford (UK)

Salary £: 16,775 - 25,213 pa

Applications are invited for a two-year PPARC funded postdoctoral research position in the Theoretical Astrophysics Group in the Sub-Department of Theoretical Physics to start between 1 July and October 1, 2001. The project is concerned with the formation and behaviour of helium line emission in the outer solar atmosphere, making use of observations with the SOHO satellite. Relevant fields of experience include radiative transfer, plasma physics, and modelling from astrophysical uv spectra.
Applications with a Curriculum Vitae, which includes nationality and date of birth, a brief report on research to date and the names and addresses of two referees (who should be asked to write separately by the same deadline) should be sent to Mrs G. Dancey, Sub-Department of Theoretical Physics, 1 Keble Road, Oxford, OX1 3NP, UK, by 25 May 2001, **quoting reference DR/01**.

Applicants may contact:

Prof. C. Jordan: cj@thphys.ox.ac.uk

for further information.

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), brown dwarfs, 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` .