properties of a typical red dwarf star. A number of emission features characteristic of chromospheric \((6 \times 10^3 \text{ K})\) and higher temperature (up to \(10^5 \text{ K}\)) plasmas are evident in the 18 hour SWP image, while low-excitation multiplets of \(\text{Mg II}\) and \(\text{Fe II}\) dominate the 4 hour LWR image. The features visible in the echelle images, with the exception of \(\text{Ly}\alpha\), are narrow like those of active dwarfs of earlier spectral type. The \(\lambda \lambda 2796,2803\) doublet of singly-ionized magnesium is particularly striking in this regard, and indicates that the width-luminosity relation (Wilson-Bappu effect) in \(\text{Mg II}\) extends down to stars that are only a few percent as luminous as the Sun. Finally, the emission wings of \(\text{Ly}\alpha\) visible outside of the saturated occultor core suggest that the intrinsic \(\text{H I}\) emission of the red dwarf is remarkably bright, in accord with the model proposed by L.E. Cram whereby the \(\text{H}\) chromosphere is excited largely by \(\text{UV}\) radiation from the surrounding corona, rather than by hydrodynamic disturbances from the connection zone below. This work is supported by NASA through grants NAG S199, NAG S-82, NGL-06-003-057 to the University of Colorado.

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01.10 Non-Coeval Star Formation in the Pleiades, D.K. DUNCAN, Jr., Wilson & Las Campanas Obs., T.F. JONES, Lick Obs. Surface Lithium abundance, a parameter which usually decreases with age in late type stars, has been determined for Pleiades stars as cool as \(T_\text{eff} \sim 4700\) K and Hyades stars as cool as \(T_\text{eff} \sim 5300\) K. A large abundance spread is seen among the coolest Pleiades stars, consistent with their having been formed over an interval as long as \(0.4 \times 10^6\) yrs., several times longer than the nuclear age of the cluster. Observations of the strength of the \(\text{Ca II H}\) and \(\text{K}\) line emission in three of the Pleiades stars also indicates a significant spread in age.

Some Pleiades stars as cool as \(T_\text{eff} \sim 5200\) have primordial \(\text{Li}\) abundances, in conflict with the predictions of pre-main sequence stellar evolution calculations. Such calculations probably overestimate the amount of convection.

01.12 Models for the Plage and Quiescent Chromosphere and Transition Region on II Peg. N. MARSTAD and J. L. LINSKY, * JILA, Univ. of Colo. and NBS. --- II Peg (HD 224065) is a 6.7 day period RS CVn system consisting of a K2-3 IV primary star and an unknown secondary. In a systematic series of IUE spectra obtained on Oct. 1-7, 1981 with our collaborators at Catania and Armagh, we found greatly enhanced emission line fluxes between phases 0.45 and 0.95, antiphase with respect to the optical light curve. We interpret this brightening as due to the rotation of a plage region, which roughly overlies the dark starspots, on top and off of the visible disk. We present a series of models for the plage and quiescent regions computed to fit the observed \(\text{Mg II}\) line profiles and fluxes in the C II-IV, SiIII-IV, and \(\text{N V}\) lines. These hydrostatic equilibrium models differ according to the assumed fraction of the bright hemisphere that is covered by plage regions. We compare these plage models to solar plages and estimate the energy balance and heating rates.

This work is supported by NASA grants NAGS-82 and NGL-06-003-057 through the University of Colorado.

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01.13 Chromospheric Activity Near the ZAMS: Ultraviolet and X-ray Observations of the UMa Cluster. F. M. WALTER, J. L. LINSKY, * JILA, Univ. of Colo. and NBS, and T. SIMON, Univ. of Hawaii. --- We present and discuss IUE and Einstein observations of F, G and K dwarfs in the young \((\sim 3 \times 10^6\) yrs.) UMa cluster. We observed strong chromospheric and transition region emission in all members of the UMa nuclei with \(\text{B-V} > 0.30\). \(\text{Mg II}\) surface fluxes are comparable to those of Hyades stars of similar \(\text{B-V}\), despite the factor of two difference in ages. Three purported members of the UMa stream are shown to have extremely low chromospheric surface fluxes; these are likely to be field stars which happen to have space velocities similar to the stream members. We suggest that chromospheric and coronal activity diagnostics can be used to discriminate true members of the stream from the older field stars.

This work is supported by NASA Grants NAGS-82 and NAG-8400 through the University of Colorado.

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