01.05 Active Region Photometry and Solar Variability, G. A. Chapman, G. Grosman, A. D. Rezog, J. K. Lawrence, J. D. Meyer, SFO/OGIM, and J. C. Shelton, TBM. It has been shown (Wilson et al. 1981) that sunspots account for most of the fluctuation in the solar irradiance seen by the SMM/ACKM during 1980. Approximately 46% of the variance in the ACRIM signal is not explained by a simple sunspot model (Hudson et al. 1982). We will make detailed comparisons of the sunspot irradiance fluctuation deduced from digitized full disk photographs with those measured by photoelectric photometry of the same active regions, using a single silicon detector and a diode array detector. The diode array is a Reticon 512-element detector. Two-dimensional photometry was obtained during most of July through September, 1982 of a number of active regions. A preliminary description of these data will be given to show their usefulness in determining the irradiance deficit of sunspots, the irradiance excess of faculae, and the existence of “bright rings.” These data will be studied to determine, eventually, the energy balance of active regions. This research was supported, in part, by NSF Grant No. AST-8121663.

References

01.06 Photometric Variability of Titan, Uranus, and Neptune 1979-1982, T. E. Armandroff, Sec. Peak Obs. & Yale Univ. Obs., R.W. Radick, APOL, Sec Peak Obs. - Differential photometric observations of Titan, Uranus, and Neptune have been made since 1979 in the u, v, b, and y passbands of the Strongen system using the Cloudcroft 1.2 m telescope. Seasonal mean magnitudes for each object and passband have been calculated after making distance and empirical phase corrections. For each object, the brightness decreases from 1979 to 1980 and increases thereafter—that is, it decreases with increasing solar activity, and increases after solar maximum. Our data qualitatively confirm Lockwood’s (Icarus 32, 413) b and y results, and support his hypothesis that such variations are caused by albedo changes induced by changing solar activity. We also establish planetary brightnesses in u and v behave in the same manner as in b and y. Full results will be presented and discussed.

01.07 Variability of Solar-Type Stars in the Hyades, R.R. Radick, APOL/Sec. Peak, G.W. Lockwood and D.T. Thompson, Lowell Obs., and A. Warmbier III, Penn. St. - Contemporary, independent b photometry of 36 main-sequence F, G, and K stars in the Hyades obtained at the Cloudcroft and Lowell observatories indicates that many of the G and K stars are low-level variables. On the other hand, we find no variability of F7 to be variable. The stars were observed on 4-8 nights at Cloudcroft and on 3-10 nights at Lowell. The threshold for detection of variability (95% confidence level) was about 0.012 mag at Cloudcroft and 0.006 mag at Lowell. Tabulated below are the number of variable stars and, in parentheses, the total number of stars observed for four spectral type ranges.

<table>
<thead>
<tr>
<th>Spectral Type</th>
<th>Site</th>
<th>F0-F6</th>
<th>F7-G0</th>
<th>G1-G6</th>
<th>G7-K2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cloudcroft</td>
<td>0(9)</td>
<td>0(7)</td>
<td>2(7)</td>
<td>4(13)</td>
<td></td>
</tr>
<tr>
<td>Lowell</td>
<td>0(9)</td>
<td>5(7)</td>
<td>4(7)</td>
<td>7(13)</td>
<td></td>
</tr>
</tbody>
</table>

The agreement between the groups of stars found to be variable at each site was good, despite the difference in detection thresholds and number of observations at the two locations. Our interpretation, subject to further observational test, is that the variations are produced by rotational modulation of irradiance patterns associated with active regions and spots on these stars.

01.08 Fractional Stellar Convection Zone Depth and the Generation of Magnetic Flux, M. S. Giampapa, Sac Peak.

The importance of convection to the origin and structure of stellar chromospheres is not well understood, either empirically or theoretically. Hence, it is crucial to determine the degree of magnetic field-related nonradiative heating present in the atmospheres of a sample of stars which represent a range of fractional convection zone depths (i.e., convection zone depth/stellar radius). The very late M dwarf stars may be entirely convective. Thus these objects provide a sensitive test of the importance of the fractional convection zone depth to the generation of magnetic fields and the associated nonradiative heating in the atmospheres of late-type main sequence stars.

I present preliminary results from an observational investigation of very late M dwarf stars utilizing the Multiple Mirror Telescope facility. I find that dwarf stars later than spectral type M5 do not necessarily exhibit Hα line emission, contrary to the assertion by Joy and Abt (1974). The preliminary results I discuss may have important implications concerning the nature of dynamo field generation in the late-type dwarf stars.

01.09 THE NARROW ULTRAVIOLET EMISSION LINES OF THE RED DWARF AU MICROSCOPII (MM66) T.M. Ayres, LSRP, B.C. K. Eriksson and H. Ohlson, Astronomiska Obs., Uppsala, J.L. Linsky, JILA, U. CO & NASA, M. Saxner, Astronomiska Obs., Uppsala, and R.E. Stencil, NASA Headquarters. - We present high-dispersion far-ultraviolet (1150-2000Å) and middle-ultraviolet (2000-3000Å) spectra of the red dwarf AU Microscopii (MM66), the first such observations of lower main sequence stars to be acquired successfully with the International Ultraviolet Explorer. The optical brightness of AU Mic was measured photometrically during the long exposures, and no indication of flare activity was seen. Accordingly, the spectra we obtained likely represent the quiescent ultraviolet