ABSTRACTS

1980BAAS...12..538C

31.08.10 The Galactic Foreground Reddening in the Direction of the Magellanic Clouds. D. B. McNAMARA and K. A. FELTZ, Jr., Brigham Young University - Intermediate-band photometry (uvby) of 50 galactic A and F stars in the direction of the Magellanic Clouds has been secured at Cerro Tololo Inter-American Observatory. The photometry was secured on stars between the 9th and 12th apparent magnitude. The observational data indicate a very uniform reddening over the areal extent of both galaxies. We find an average color excess of E(B-V) = 0.013 in the direction of the LMC and E(B-V) = 0.022 in the direction of the SMC. These values are somewhat smaller than obtained previously and suggest an increase of ~5 to 10 percent in the usual accepted distances to the Clouds. This work was supported in part by the National Science Foundation.

31.09.05 Metal Abundance of Magellanic Cloud Variable Stars. BUTLER, D., DEMARQUE, P., and SMITH, H.A., Yale University - The Preston 48 metal abundance indicator has been determined for (1) six ordinary RR Lyrae stars in an outlying field of the LMC, (2) two ordinary RR Lyrae stars in an outlying field of the SMC, (3) three anomalously bright "RR Lyrae" stars in an outlying field of the SMC, and (4) three anomalously bright "RR Lyrae" stars in one of the densest central fields of the SMC. For the four fields, we find:

<table>
<thead>
<tr>
<th>Field</th>
<th>[Fe/H]</th>
<th>± m.e.</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1)</td>
<td>-1.4</td>
<td>0.1</td>
</tr>
<tr>
<td>(2)</td>
<td>-1.8</td>
<td>0.2</td>
</tr>
<tr>
<td>(3)</td>
<td>-1.3</td>
<td>0.1</td>
</tr>
<tr>
<td>(4)</td>
<td>-0.4</td>
<td>0.1</td>
</tr>
</tbody>
</table>

These results indicate the existence of a metal-poor halo-like population in both Clouds. For the SMC, we are able to contribute to a general understanding of early chemical evolution. In particular, we find that a considerable amount of chemical evolution has taken place within the last billion years. For the purpose of determining spatial, as well as temporal variation in Cloud chemical composition, we are expanding the scope of the present investigation by including a greater number of fields, both outlying and central. This research has been supported by the National Science Foundation (AST-7910009).

31.10.05 A Theoretical Calibration of the 65 System. A. MANDUCA and R.A. BELL, U. of MD. - The 65 system of determining iron abundances in RR Lyrae stars has been calibrated theoretically using synthetic spectra. The results support the existing empirical calibration of Butler (1975, Ap.J., 200, 68), in the range [Fe/H] = -0.8 to -2.2 and suggest how it should be extrapolated to even lower abundances. For [Fe/H] > -0.8, however, the results suggest that for a given 65 the [Fe/H] deduced should be somewhat lower than the value Butler would predict. A previous theoretical calibration by Rodgers (1974, Ap.J., 191, 433) is found to give abundances which are systematically high by 0.4-0.5 in [Ca/H].

31.11.05 An IUE Survey of the Ultraviolet Emission Line Spectra of dM and dM Stars. R.G. CARPELTEN and R.P. WING, Ohio State U., P.L. BORKOFF, and J.L. LINGSY, JILA, U. of Colo., & NBS. - We present IUE low dispersion spectra covering the range 1150-3200 Å of 7 dM and 3 dM stars. Included in the survey are the dM stars E2 Vir, BM4-4244, Prox. Gen., AT Mic, AH Mic, UV Cet, and W Cet, the dM stars Gl 411, and Co 187, and the K7 V star 61 Cyg B. Several of these stars were observed in the time-trailed mode to search for flares, but we have not detected a flare in any of the spectra. We present ultraviolet line fluxes and line surface fluxes, which are compared with quiet Sun data and with Ca II fluxes in the literature. Prominent in the spectra are lines of N V, C IV, Si IV, Mg II, O II, N II, Si II, Mg II, Al II, Fe II, O I, and C I. Additional ions which may be present in some spectra are O V, Fe III, NI, II, S II, and S I. Several trends are clearly seen in the data: (1) Surface fluxes of the transition region lines (T = 2x10^6-3x10^7 K) of the dM stars are similar to the quiet Sun, whereas the chromospheric lines (Mg II, Ca II) are fainter by up to a factor of 50. (2) Surface fluxes of the transition region lines in the dM stars are typically 10-100 times larger than the quiet Sun, whereas surface fluxes of the chromospheric lines are 0.1-1 times that of the quiet Sun. Solar plage and the active chromosphere dwarfs A V or G V and a few K2 V exhibit a smaller trend of increasing line surface flux ratio (to the quiet Sun) with increasing temperature of formation. (3) Neutral species are extremely weak or not present in the dM star spectra, whereas they are prominent in the dM star spectra. We will discuss implications of these data on the likely chromospheric and transition region temperature structures of dM and dM stars.

This work is supported by NASA grants to Ohio State University and the University of Colorado.

*Guest Observer, IUE.
†Staff Member, Quantum Physics Division, NBS.

© American Astronomical Society • Provided by the NASA Astrophysics Data System