

57.11

The Extremely Rapidly Rotating M-Dwarf Star Gliese 890

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The star GLS 890 is an M-dwarf in the solar neighborhood which appears to be an ordinary field star kinematically. However, it has been demonstrated to have a remarkably short period of rotation (10^{30} m) corresponding to an equatorial velocity of ~ 80 km./s.. The original photometry (1983, Sept.) revealed a sinusoidal variation suggestive of a single dark-spot region. Recent photometry (1984, Sept.) shows two dark-spot regions separated in longitude by $\sim 140^\circ$. We report here a recent (1984 Oct.) set of synchronous observations of the H-alpha emission feature, I.U.E. spectra, and broadband photometry designed to delineate the spatial distribution of spots and bright plage regions, and to measure the energetics of the chromosphere and the transition region.

57.12

An Updated Trigonometric Parallax for LHS 2924

D.G. Monet and C.C. Dahn (USNO, Flagstaff Station)

Probst and Liebert (Ap.J.274, 245,1983) reported that the proper motion star LHS 2924 ($V=19.7$; $\mu = 0.80''/\text{yr}$) possesses a peculiar energy distribution and a blackbody temperature of 1950 ± 150 K. The possibility of a substellar-mass brown dwarf was suggested. A preliminary trigonometric parallax based on data obtained with a CCD detector at the prime focus of the KPNO 4-m reflector yielded $0''115 \pm 0''005$ (Monet and Dahn, IAU Colloquium No.76, 91,1983), although significant systematic errors may be present. Additional CCD astrometric data have been obtained for this star using the ST WF/PC Mark IV Camera on the USNO 1.5-m reflector. The KPNO and USNO data are combined to provide an updated parallax for this unique object.

57.13

Spectrophotometric Studies of Faint Luyten Proper Motion Stars

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Broadband photometry and/or reticon spectroscopy have been obtained for LHS stars with $m_r \geq 14.0$, $\mu \geq 0''80 \text{ yr}^{-1}$ and $\delta \geq -20^\circ$. Eleven new dwarf stars with $M_V \geq 16.0$ were identified in the process. A redetermination of the local space density of lower main-sequence stars has been carried out using this new material along with similar data for brighter ($m_r < 14.0$) LHS stars obtained either from the literature or from unpublished data.

57.14

Accretion Characteristics of the AM Her Stars CW1103+254, E1114+182 and PG 1550+191

P. Szkody (U. Washington), J. Liebert (U. Arizona), K.J. Panek (CSC)

IUE and ground-based optical and IR observations are used to assess the strengths of the accretion columns in three AM Her type systems. PG 1550 is a strong UV

emitter, similar to AM Her and E1405, with the possibility of the existence of a hot EUV source visible at short IUE wavelengths.

Time resolved data on CW1103 shows characteristics at the normal state that are very similar to the low accretion state in VV Pup. When the accreting pole is viewed during the bright phase of the optical light curve of CW1103, there is essentially no UV enhancement. During the faint optical phase, the UV-optical flux distribution fits with a 13000K white dwarf at a distance of 140 pc. This system may be the best example of the white dwarf domination of the UV continuum in a polar. The cool temperatures of the white dwarf in CW1103 and VV Pup are in sharp contrast to the hot white dwarfs/spots in AM Her and TT Ari at the low state.

The faintness of E1114 prevented the establishment of a good flux distribution, but the low UV flux implies a low accretion system.

Session 58: Cosmic Rays; Early Universe**2:40-5:00 (Mohave Room, Convention Center)**

58.01

Detection of 21 cm Absorption at $z = 2.04$

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We report the detection of 21 cm absorption at a redshift $z = 2.0396$ in the QSO PKS 0458-020. The feature has been fitted with 2 Gaussian functions with velocity centroids separated by 16 kms^{-1} , and line depths of .22 and .13 and velocity dispersions of 6.1 kms^{-1} and 5.0 kms^{-1} respectively. Comparison with the column density $N(\text{HI}) = 8 \times 10^{21} \text{ cm}^{-2}$ inferred from damped Ly absorption implies that the spin temperature $T_s < 800\text{K}$. The absence of absorption within $\pm 125 \text{ kms}^{-1}$ of the detected feature means that clouds like those detected comprise less than .04 of the total HI. The kinematic structure and temperature of the detected feature suggest that the absorbing HI is a galactic disk.

58.02

A Precise Measurement of the Microwave Background Temperature From Observations of Interstellar CN

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We present very high signal-to-noise ($S/N > 2000$) observations of the 3874 A band of interstellar CN toward ζ Oph, ζ Per, and o Per. In the ζ Oph, ζ Per, and o Per lines of sight, the saturation-corrected CN line strengths yield respective excitation temperatures of 2.72 ± 0.05 K, 2.76 ± 0.05 K, and 2.78 ± 0.07 K for the $J = 0 \rightarrow 1$ rotational transition at 2.64 mm. The excellent agreement among these temperatures confirms the expectation that the cosmic microwave background radiation (CMB) is primarily responsible for populating the excited rotational levels of interstellar CN. With small corrections for the local CN excitation due to electron impact, the $J = 0 \rightarrow 1$ excitation temperatures toward ζ Oph, ζ Per, and o Per are all consistent with a CMB brightness temperature of 2.70 ± 0.04 K at 2.64 mm. This value represents the most precise determination to date of the CMB intensity at any wavelength. In addition, the CN $J = 1 \rightarrow 2$ excitation temperatures toward these objects indicate a CMB temperature of 2.76 ± 0.20 K at 1.32 mm. Our temperatures at 2.64 mm and 1.32 mm are thus consistent with a 2.7 K blackbody spectrum for the CMB and do not support the spectral distortions observed near