posing prescribed temperature rises on published model photospheres in the region of the HR diagram which is occupied by RS CVn active secondaries (T_{\text{eff}}=6000-6000 K, log g=2-4). We use a hydrogen atom containing 5 levels plus continuum to predict emergent flux profiles of Hα, Hδ, and Hγ (cf. Cram and Mullan, Ap. J. 234, 579, 1979). The Hα line in the RS CVn system has been observed at several epochs by Bopp and Smith (prepublication results). The observed profiles are much too wide to be fitted by any of our static model chromospheres. Rotational broadening cannot be important in this pole-on system. We have applied macroturbulent velocities derived by the isotropic Gaussian distribution exp \(-v/v_0^2\). This fits the observed profiles well if v_0 = 20-40 km/sec. We propose that these large macroturbulent velocities can be attributed to non-static magnetic structures in the atmosphere, and that these magnetic structures are also responsible for the vigorous activity which is characteristic of RS CVn secondaries. In our view, the atmospheres of RS CVn secondaries are in a state of constant magnetic upheaval, perhaps because closed magnetic loops cannot find static equilibrium when they emerge from beneath the photosphere into the corona.

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International Ultraviolet Explorer (IUE) in the far-ultraviolet (1150-2000 Å) spectrum of the archetype red giant Arcturus (K2 III) are A-X fourth positive bands of carbon monoxide excited by chromospheric emissions of O I, C I and N I. The appearance of fluorescent CO bands near the wavelengths of commonly used indicators of high-temperature (T > 2 x 10^5 K) plasma, such as C II 1335 and C IV 1548, introduces a serious ambiguity in diagnosing the presence of hot material in the outer atmospheres of the cool giants by means of low-dispersion IUE spectra as weak emission features may not be C II and C IV. A test of whether emission features at 1340 Å and 1545 Å are CO is that the expected ratios for CO fluorescence are f_{1335}/f_{1545} \approx 1/2 and f_{1545}/f_{1540} \approx 1/2. Other stars whose spectra probably show CO fluorescence include a Tau (K5 III), \gamma Dra (K5 III), \alpha UMa (K4 III), and probably also \xi Cyg (O8 II) and 9 Peg (O5 Ib).

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*Guest Observer with the International Ultraviolet Explorer satellite.

TJILA/LASP Visiting Fellow; on leave from The Johns Hopkins University, Baltimore, MD.

#Staff Member, Quantum Physics Division, NBS.

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05.02 The Corona and Chromosphere of Proxima Centauri During Flare and Quiescent Times. B. M. Rausch,* N. Lockwood Alto Res. Lab., P.L. Borrmann, J.I. Link, J.P. Stencel, JILA, Univ. of Colo., & Ball State U., O. B. Sleee, CRISTO. X-ray measurements and ultraviolet spectra (1750-3200 Å) of the M dwarf flare star Proxima have evidenced the Imaging Proportional Counter on Einstein (HEAO-2) and the UV Spectrograph on IUE have detected quiescent coronal emission at a temperature of 4x10^6 K and faint chromospheric and transition region emission lines (Mg II, Fe II, C IV, Si IV, N V). The first definitive observation of coronae on M dwarfs (Ap. J., 257, L73). A bright, time resolved soft X-ray flare was also observed at that time (6 and 7 March 1979) reaching a maximum temperature of 17x10^6 K and a peak luminosity of 7.4x10^7 ergs/s, comparable to a large solar flare (Ap. J., 262, 1990). On 20 August 1980 with the Imaging Proportional Counter and the Imaging Proportional Counter on Einstein, the ground based observing program. Preliminary data of the IUE data indicate another major flare occurred with considerable enhancement of the ultraviolet emission line spectrum. For example, the C I 1547 Å line brightened by a factor of 2 and the C IV 1549 Å line by a factor of 3. These enhancements would be considerably larger if the flare duration were less than the 60 minute IUE observation. We will present these new observations in conjunction with the previous measurements and recent SMM data on solar flares.

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*Guest Observer, Einstein Observatory (HEAO-2) and the International Ultraviolet Explorer.

#Staff Member, Quantum Physics Division, NBS.

05.04 Photoelectric Scans of Field Horizontal-Branch Stars. A. G. Davis Philip, Union College and Dudley Observatory and D. S. Hayes, KPHO - Over the past two and one half years a group of stars classified in the literature as field horizontal-branch stars has been scanned with the Harvard scanner at CTIO and KPHO. The stars HR 718, 3454, 4468, 5511 and 9087 were used as standard stars and have been measured an average of over 35 times each. Typical rms errors in a 40 Ångstrom slot at 3400 Ångstroms are \pm 0.02 mag. A catalogue of the mean energy distributions for each star will be displayed at the poster session.

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05.03 Far-Ultraviolet Fluorescence of Carbon Monoxide in the Red Giant Arcturus. T. R. Ayres,* JILA, Univ. of Colo., R.W. Hoard and J.L. Link. We present evidence that many of the weak emission features observed with the

05.05 IUE Observations of Stellar Lines in OB Stars. L.W. Ramsay, JPL, C.J. Neidham, Bentley Coll., and L.A. York, Intermetrics Inc. High-resolution spectra have been obtained on the short-