G.E. BRUECKNER, NRL - Short lived emission features with large line widths are observed in the C IV resonance doublet near 1550 Å. The data were obtained during rocket flights on July 21, 1975 and March 1, 1979 by the NRL High Resolution Telescope and Spectrograph. The spatial, spectral, and time resolution were 1 aro-sec, 0.1 Å and 20s respectively. We selected a number of wide profile transient events with full width at half maximum (FWHM) of 0.3 - 0.5 Å, lifetimes of 20 - 200 s and sizes from less than 2 aro-sec up to 6 aro-sec.

A possible explanation for these transient phenomena is that the C IV emission originates in a plasma undergoing rapid heating. For this case we assume that the line width is the result of thermal broadening, obtaining an upper limit for the electron temperature, $T_e$, $T_e > 10^{5}$ K, larger than the temperature of maximum ionization fraction ($10^{5}$ K) for C IV. Under the condition that some mechanism quickly ($< 10$ s) heats the electron from below $10^{5}$ K to the observed $T_e$, then ionization will lag behind. The observed intensity for an emission line such as C IV (1550 Å) will first increase as C III is ionized to C IV, and then decrease as C IV is ionized to C V. The time that we observe emission from C IV would then be roughly proportional to the inverse of the collisional ionization rate coefficient times the electron density. Densities determined from the observed lifetimes in this manner are compared with those found from density sensitive line intensity ratios. Sizes, pressures and temperatures for the transient features are also compared with empirical scaling laws for coronal and flare loops.

29.25.03 A Presentation of Some BCS Spectra, A. N. Parmar, For the XRP Team - A number of X-ray spectra obtained with the Bent Crystal Spectrometer (BCS) on the Solar Maximum Mission satellite are presented. The BCS enables Solar Flares to be studied with high temporal and spectral resolution. Major line identifications are presented, and in addition comparisons are made with theoretical spectra to search for evidence of non-equilibrium effects.

29.26.03 Dynamics of the High Temperature Flare, J. W. Liefheber, LPAI, For the XRP Team - The Solar Maximum Mission X-ray Polychromator has obtained profiles of spectral lines emitted above 10^5 K with resolution comparable with the Doppler width. Preliminary results indicate that widths exceed the thermal width corresponding to electron temperatures measured with the same lines, and decrease markedly after flare maximum. The variation of width, intensity, and position of the helium-like Ca XIX and Fe XXV will be presented.

29.27.03 SMM Orbiting Coronagraph - Early Results - C. Sawyer, W.J. Wagner, E. Hildner and L.L. House, HAO/NCAR - Early observations by HAO's coronagraph-polarimeter carried aboard the SMM satellite indicate that instrument performance will allow attainment of the main scientific goals: to observe the rapid response of coronal density and magnetic field to transient events and to measure the spatial distribution and slower evolution of electron density and field. Emission-line polarization independently measures magnetic-field orientation and tests how faithfully density structure follows field lines. Mass and velocity of chromospheric ejecta can be found from H-alpha images, allowing comparison of kinetic and potential energy of ejecta with density restructuring and acceleration of coronal material. The hypothesis that light scattered by the dust corona is reddened and can be measured and subtracted from the electron-scattered coronal light will be tested by measuring intensity in the red and blue spectral regions. The ability of the coronagraph-polarimeter to respond to a flare alert from an onboard X-ray burst detector or from a ground observatory allows it to be used purposefully to cooperate with SMM ultraviolet and X-ray experimenters and with ground-based optical and radio observers to obtain a complete record of flare and prominence events from the chromosphere through the corona and into the solar wind. This work is supported by NASA contracts 555909 and 555909A.

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29.28.03 Active Region Morphology and Evolution - Images from the Ultraviolet Spectrometer and Polarimeter, R.A. SHINE, J.C. BRANDT, R.D. CHAPMAN, P.J. KENNY, A.G. MICHALITSKANS, B.E. MOOGATE, NASA-GSFC; B.C. BRUNER, R. REHSE, S.A. SCHOLLMAN, LMSC; C.C. CHENG, B.A. TANDBERG-HANSEN, MSMC; G.R. ATHAY, HAO, J.M. BECKERS, U. of Ariz.; J. GURMAN, Applied Research Systems; W. HENZE, Teldeyn Brown; C.L. HYDER, U. of Ala. (Huntsville).-The Ultraviolet Spectrometer and Polarimeter on the SMM satellite has been used to obtain sequences of spectrohelioograms in spectral lines originating over a range of heights from the upper photosphere to the corona with an emphasis on the transition region. The bulk of this data has been taken using a 3.5" aperture which is rastered over the region of interest. Sequences with fields of view of several arc minutes will be presented in a study of the vertical and horizontal structure of active regions and their evolution on a time scale of several days. Movies of sequences with time resolutions ranging down to 6s will be shown in a study of very rapid flashes seen in C IV 1548 Å and N V 1238 Å.