This suggests fourteen per month encircling the sun. An outward moving cloud observed on 11 January 1973 contained an estimated 10^{10} electrons (Stewart et al., Proc. IAU Symposium 27, Session P, Surfer's Paradise, Australia, 10 September 1973). The characteristics of other events will be described. *Work supported by NASA.

75. **A 512-Channel Solar Magnetograph.** D. TRUNBO, J. HARVEY, W. LIVINGSTON and C. SLAUGHTER, Kitt Peak National Observatory. Designed as the primary instrument for the Vacuum Telescope, this Babcock-type magnetograph produces a full disk map having a one arc-sec pixel in 35 minutes scan time. Magnetic measurements are made in 0.5 A windows of the wings of the moderately strong line Fe I 8689 Å. Polarization analysis is by a Kerr Cell driven with a 60 Hz square wave. Detection is by a pair of Reticon RL512-24 self-scanned silicon photodiode arrays. Shot-noise limiting performance is achieved at operating light levels (1/3 full saturation in the 16 ms exposure time) utilizing a charge integrating preamplifier. Full disk magnetograms taken with this instrument are compared with similar records made with the old 40-channel system.

76. **Temperature and Density of the Coronal Portion of an Active Region.** C. VALIANA, M. CERASSIMENO, A. ZIERING, A. TIMOTHY, M. LANDINI and B. C. MONCLOIRI-POSSI*, ASAE, Cambridge, Massachusetts - Broadband X-ray images of an active region obtained by the ASAE X-ray Telescope Experiment on Skylab have been analyzed in terms of a simplified experimental model of the coronal structure of an active region. From the data, one can derive the temperature and density of the plasma and the strength of the containing magnetic field as a function of position in the assumed configuration. The method of analysis will be presented and the results will be discussed. *Osservatorio Astrofisico di Arcetri, Florence, Italy.

77. **ATM Observations of the Time Dependent Intensity Fluctuations in the Extreme Ultraviolet.** J.A. CIVAS, J.R. VENKATESH, H.T. FOSKELL, M.C. NUBER, R.W. NOYES, E.M. REEVES, E.J. SCHMUL, J.G. TIMOTHY, G.L. WITHBROE, Center for Astrophys. Harvard College Obs. and Smithsonian Astrophys. Obs. - High temporal, spectral and spatial resolution EUV observations are reported. A search for the 300 sec. brightness oscillations made in several chromospheric, transition region and coronal lines. This search was carried out in the network and inter-network areas as well as in active regions. We have found random intensity fluctuations occurring synchronously in several chromospheric and transition region lines, but the data show no indication of the 300 sec. oscillation. In a power spectrum analysis, it has also been found that the amount of power at high frequencies increases with temperature of formation of the emission lines studied. Resulting constraints which can be imposed on the heating mechanism of the corona will be discussed.

78. **Longitude Dependence of Hard and Soft Solar X-Rays.** J. VORPAHL, Sacramento City College, University of California at San Diego. The 'Occurrence Probability' (OP) for hard x-ray (E > 20 keV) was determined, along with the OP for soft x-rays (E < 20 keV) detected by both the OSO-7 and OSO-5 satellites. The number of events in both 10° and 20° intervals were tested separately; east and west longitudes were treated as one since no asymmetry around Central Meridian was evident. By definition, OP was found by taking the number of x-ray events per 10° longitude interval and dividing by the number of reported X flares per 1° interval. The latter was done in order to correct for the optical seeing distribution from center to limb. The mean (X) and standard deviation (S.d.) of this ratio was obtained for each 10° and 20° range. The study suggests that a longitude peak exists at higher latitudes for hard x-rays (20-32 keV) and decreases with altitude while no standard deviation are evident when either 10° or 20° intervals are used. For the 10° intervals, peaks are observed between 40-50° and 60-80° longitude. No similar peak occurred in the longitude study of the soft x-rays measured by either OSO-7 or OSO-5 however. The lack of a soft x-ray longitude effect was also suggested when the OSO-5 bursts were divided into categories by intensity and then plotted as a function of distance from Central Meridian. Again no definite longitude variation was evident as more and more intense x-ray bursts were plotted. Results in the soft x-ray range are interpreted to mean that 10-20 keV x-radiation is thermal and therefore isotropic. The observed center to limb effect in the hard x-rays suggests a beaming, or anisotropic distribution, of the high energy electrons.

79. **Relationships Between MMF Trajectories and Sunspot Penumbral Filament Structure.** D. VRAVEC and GARY A. CHAPMAN, San Fernando Observatory, The Aerospace Corp., El Segundo, Calif. -- A time-lapse magnetic movie of the region of the Sun taken on 5 August 1972 exhibits a large number of individually resolved outflowing MMF's (moving magnetic features). The 7.8 hr span of the movie permits the paths of many of the MMF's to be observed and in many cases a close correspondence exists between the orientation of the trajectory of each of these MMF's and the orientation of the nearest penumbral filaments. This correspondence is interpreted as evidence for a physical interaction between an outflowing material velocity field associated with MFO (magnetic flux outflow) and the penumbral magnetic fields.

80. **The Fast Rearrangement of Coronal Magnetic Fields.** WILLIAM J. WAGNER, Sacramento Peak Observatory, AFCLR, Sunspot, N.M., and RICHARD T. and SHIRLEY F. HANSEN, High Altitude Observatory, NCAR, Mauna Loa, Hawaii. -- A fast coronal transient event was observed simultaneously on 17 February 1972 by the Sacramento Peak Observatory 6-inch f/30 filter coronagraph and the High Altitude Observatory K-coronameter. We interpret the rapid opening of green line structure associated with the disappearance of a white light streamer as material motion of iron ions and electrons. Together with the subsequent two-fold increase in K-corona brightness in an adjacent region, this is taken as evidence of a transference of electrons to a new streamer in a realignment of magnetic flux tubes accompanying a flare.

81. **The Temperature Structure of a Coronal Active Region.** A. B. C. WALKER, JR., E. B. MAYFIELD, D. L. MCKENZIE, and J. H. UNDERWOOD, The Aerospace Corp., El Segundo, Calif. -- The S-056 x-ray telescope on Skylab obtained high resolution images of coronal active regions using several thin film filters which limit the film response to relatively narrow wavelength bands between 3 and 40 Å. The relative intensity in the images obtained with the various filters contains information on the temperature structure within the active regions observed. However, unless we...