ABSTRACTS

suggested by Endler and Deubner (Astron. & Astrophys., in press). We find some evidence for periodic ripples in the high frequency tail of the power spectra of the solar wind as was reported earlier by Deubner (Solar Phys. 51, 189).

6.5 Photospheric and Chromospheric Penumbral Waves, J.A. ADAM, Univ. of Rochester, F.S. CALY, Queen Mary College, London - The full magnetospheric wave equation is numerically solved for the particular penumbral model of Nye and Thomas (1974). For chromospheric running penumbral waves it is found that the maximum vertical velocity occurs at the base of the Fe II region (z = 300 km) much lower than previous VDB estimates have suggested. The maximum vertical kinetic energy occurs at z = -130 km. Very significant horizontal velocities are also found for these waves, and, in the absence of shear flow, it appears that previous estimates of photospheric vertical velocities of order 10^-3 km s^-1 could be substantially underestimated. For the photospheric events of Musman et al. (1976), a high vertical velocity maximum is found in the corona and the modes appear highly dispersive for periods < 220 s. The effects of a sinusoidal shear flow profile on running penumbral waves are examined, and it is found that the eigenvalues (horizontal wavenumber k) are little changed, but the eigenmodes become significantly distorted; the position of the vertical velocity peak rises compared to the zero flow case, and the velocity below that peak drops significantly. This effect may well cancel the increased estimates based on zero flow.

7.2 Coronal Transients as Observed in Fe XIV 5303A at Sacramento Peak Observatory, R.C. ALTROCK and H.L. DEMASTUS, A.F. Geophysics Lab., SOO - An observational program has been undertaken at Sacramento Peak Observatory to photoelectrically detect coronal transients. Continuous observations are made in the Fe XIV 5303A green line, utilizing the 60 cm coronagraph and the Photoelectric Coronagraph Photometer. Scans at three heights above the limb are combined to form a low-resolution picture of the green-line corona every 20 - 30 minutes. Difference pictures, relative to an initial scan, can be generated to search for sudden changes in the corona. The first few days of operation of this program have yielded three low-lying events (1.55 solar radii) following minor chromospheric activity (a surge and eruptive prominences), which propagated up through the corona with velocities on the order of 100 km/s. Statistics of green-line transients will be discussed.

7.3 MAJOR MASS EJECTION RATE FROM THREE SPACE CORONAGRAPHICS - C. Sawyer*, 903 E. Moorhead Cir. #2L, Boulder CO 80303; R. Howard, N. Sheeley, M. Koomen, D. Michels, Naval Res. Lab. - Coronal mass ejections were observed by the coronagraph/polarimeter on SMM in 1980, by Solwind in the same period, and by Skylab in 1973-74. 1980 events agree well: when both coronagraphs were operating, 95% of ejections detected in the 2.5 to 10 R_s field of Solwind could be detected also in the 1.5 to 6 R_s field of C/P. We determine rates for "major mass ejections", readily detectable by any of the three instruments, and defined by 77 Skylab events. The same criteria are not by 70 C/P transients. Solwind-C/P comparison shows that 51 Solwind events (61% of those observed during SMM) are "major". For the SMM period, Solwind and C/P data together give a rate estimate that is independent of the effects of data gaps. This rate, within about 10%, is 1/day. Effects of data gaps, consistent with this value, were estimated for C/P. A parallel estimate of effects of data gaps on the Skylab rate yielded the value 0.6 per day. Thus we estimate that the rate increased between the pre-minimum Skylab period and the next activity maximum by a factor roughly equal to 2. In the same interval, sunspot number increased by a factor 4.7, occurrence rate of flares (imp > 5) by a factor 5.8, and that of type II/IV spectral radio bursts by a factor 3.6. Occurrence rate of geomagnetic storms with sudden commencement, indicators of interplanetary shock waves in the ecliptic plane, increased by a factor 3. For mass ejections within 30° of the equator, the rate is similar for the two periods; the relatively small increase in total rate is due to transients at higher latitude. These data demand an interpretation less simple than a one-to-one correspondence between shocks and observable near-ecliptic coronal mass ejections.

*Work done while at High Altitude Obs., NCAR.

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