19.01.03 Solar CVI Profiles as Observed by the French Experiment Abroad OSO-8. P. LEMAINE, G. ARTEMEEV, R.M. BONNET, J.C. VIAL, Lab. Phys. Stell. & Planet., A. SKJUM-MANN, High Altitude Observatory, J. J. LEBACHER, Lockheed, and A. VIDAL-MADIRAR, Lab. Phys. Stell. & Planet. - Profiles of CVI lines (2p²-3p³P, 1031.9 Å) have been observed by the OSO-8 ISP experiment at quiet and active sun regions. The shape of the broadening of the line may be Gaussian wave propagation as suggested by Boland et al. (1975, M.N.R.A.S., 171, 697), McWhirter et al. (1975, Astron. & Astrophys., 40, 63), and McWhirter (1975, private communication). Using shock wave propagation, Elzner (1975, Solar Phys., 45, 93) has computed CVI profiles which show red or blue asymmetries. Small asymmetries in the observed profiles can be an indicator of such wave propagation.

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19.02.03 Repetitive Brightenings in Active Region Transition Zone as Observed with OSO-8. B.W. LITERS, E.R. HANSEN, R.A. SHINE, E.G. CHIPMAN, E.C. BRUNNER, Jr., & P.Q. ORRALL, LASP, U. Colo., R.G. ATTHAY, O.R. WHITE, High Altitude Observatory, and G.J. BOTT- MAN, LASP, U. Colo. - The University of Colorado spectrometer aboard OSO-8 has provided many time-sequenced raster movies. In this raster mode a 2.2' x 2.75' image is recorded every 41 (or 82) sec. Such movies have been made in both active and quiet regions using CVI and SiIV lines, which are formed at about 100,000 K in the transition region, and chromospheric lines of CII and SiII. Distinctive, repeated brightenings have been observed in the transition region lines. The brightening is typically a factor of 3 to 5 times the quiescent intensity level. The rise times of each intensity pulse is on the order of 3 to 4 min with the pulses frequently repeating after an interval of approximately 10 min.

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19.03.03 Time Dependent Ionization and Radiation of a Gas Moving Through the Solar Transition Zone. O. KOENIGSTON, Naval Research Labs. - Calculations of the gas heating as function of time are performed for a stationary, one-dimensional motion of the solar plasma through the transition zone. Time dependent ionization equilibrium for oxygen are determined for a variety of gas velocities and atmospheric parameters. Owing to the finite time required for ionization the maximum abundance of the various ions occurs at temperatures that may be higher by several hundred thousand degrees Kelvin, than the corresponding ionization temperatures in a non-moving atmosphere. This leads to an increase in the line radiation particularly from the O III through O V. The atmospheres can be up to an order of magnitude higher than the corresponding ionization temperatures from stationary atmospheres having the same conductive heat flux and density structure. Finally, the extension of the calculations to atomic species other than oxygen and to more complex gas flows is discussed.

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19.04.03 Model Calculations of Chromospheric Lines Observed by OSO-8. R.A. SHINE, B.W. LITERS, E.G. CHIPMAN, D. ROY-DE PUYRE, E.C. BRUNNER, Jr., G.J. ROTTMAN, & P.Q. ORRALL, LASP, U. Colo. and R.G. ATTHAY and O.R. WHITE, High Altitude Observatory and U. Colo. - Measurements made with the University of Colorado spectrometer aboard OSO-8 of the Lα line, the OI multiplet near λ1300, the CII lines at λ1334 and λ1335, and the CI multiplets at λ1560 and λ1566 are compared with predicted line profiles for a grid of solar chromospheric models including the VAL model (Vernazza et al., 1973, Ap. J., 184, 609). In these non-LTE calculations we have allowed for the important effects of blending in the CI and CII lines and indirect excitation by L6 in the OI lines. We use these theoretical results to interpret the observations in terms of the chromospheric temperature structure of the average sun and active regions.

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19.05.03 Preliminary Analysis of NRL Rocket Spectra of the La Line Wings. G. BASSI, JILA (U. of Colo. and MSU), J. D. F. BARTOK and G. BUECCHER, NRL, J. LINSEY, JILA, and M. E. VAN HOOSIER, NRL. - We report on NRL rocket solar spectra obtained in June 1975 with a novel design stigmatic spectrograph. The data cover the spectral range 1170-1700 Å with about 1 arcsec spatial resolution and 0.05 Å spectral resolution. We discuss here spectra of the Lα wings which extend to 160 Å from line center and are a composite of 6 exposures from 0.1 to 20 sec duration. We have reduced spectra for specific regions on the Sun including plages, network, cells, a sunspot, and limb regions. We have analyzed some of these profiles by means of a partial redistribution computer code and a range of chromospheric