expected if the prominence is in thermal equilibrium with the coronal radiation field below the Lyman limit at 912 Å. The electron density at T ~ 8000 K in the transition zone around prominence threads is found to be n_e ~ 2x10^9 cm^-3, giving a gas pressure in approximate equilibrium with that in the cooler regions.

EUV spectra were obtained of an H-alpha disk filament. Intensities in the filament are slightly less than in the quiet sun for lines with λ > 912 Å, and much less for lines with λ < 912 Å, due to absorption by the Lyman continuum. This absorption is especially strong for T < 3x10^5 K. At higher temperature the absorption decreases, until for T > 10^6 K the emission is greater than in the quiet sun.

Implications of the data for the structure of prominences and filaments are discussed.


Observations of the center-to-limb variation of lines in the fundamental vibration-rotation bands of CO at 4.66 μm have been obtained, and reveal brightness temperatures as low as 3500 K near the 1mb for the strongest lines, formed at T ~ 5000 K. If the LTE assumption is justified for these lines, this indicates the presence in the quiet upper photosphere of material with temperatures equal to or below 3500 K.

Drift curves of the sum in CO fundamental lines show large temperature fluctuations on a scale compatible with the photospheric granulation. This suggests that the material with 3500 K brightness temperature may exist in the inter-granular lanes, which in the photosphere are known to be several hundred degrees cooler than the granules.

Time series of observations at disk center show the intensity of the CO fundamental lines to undergo a five-minute oscillation with an amplitude corresponding to a fluctuation of brightness temperature of several hundred degrees.

The disk center line depths of CO fundamental lines are fit by an LTE model with temperature structure similar to that of the HSRA model. Small modifications are required by the observed continuum limb darkening at 4.66 μm.

Line Profiles and Microturbulence Generated by Acoustic Waves in the Solar Chromosphere. — Ludwig Oster, Joint Institute for Laboratory Astrophysics, Boulder, Colorado, and Peter Ulmschneider, Astronomisches Institut der Universität, Homburg, Germany.

Line profiles produced by Doppler effects due to acoustic waves with profiles ranging from purely sinusoidal to sawtooth-type shock waves are computed in the temperature range typical for the solar chromosphere. Based on previous model calculations by Ulmschneider turbulent velocities are derived which show good agreement with velocities extracted from line observations.

* Of the National Bureau of Standards and the University of Colorado.


An Inconsistency in Petschek's Mechanism. — E. R. Priest, High Altitude Observatory, Nat. Center for Atmos. Res. — An internal inconsistency in Petschek's mechanism is shown to exist when variations in magnetic field strength along the current sheet are included. However, one can remove the inconsistency for both incompressible and compressible flow provided the magnetic field lines in the narrow region between a pair of shock waves are pulled out into long loops rather than being only slightly bowed. If the mechanism is modified in this way, the rate of energy conversion is not increased, but some difficulties remain to be overcome before the mechanism can be considered fully consistent.

** The National Center for Atmospheric Research is sponsored by the National Science Foundation.

*** The photospheric magnetic data were obtained by B. Howard, Hale Observatories, under contract with the Office of Naval Research.

© American Astronomical Society • Provided by the NASA Astrophysics Data System