ABSTRACTS OF PAPERS FROM OTHER JOURNALS


Observations of the spectrum of sunspots in the near infrared have revealed the presence of lines of the fundamental vibration-rotation band of the molecule HF. Model calculation carried out for two spots differing in temperature by 400 K yield a solar fluorine abundance \( \log A_F = 4.56 \pm 0.33 \) (\( \log A_H = 12.00 \)).

J.C. HENOUX


The statistical-equilibrium populations of excited states of He, O\(^{+2}\), O\(^{+6}\), Ca, Fe\(^{+7}\) and Fe\(^{+14}\) are calculated, taking account of dielectronic, radiative and three-body recombination as well as collisional and radiative transitions. Oxygen-ion abundance curves show that density effects are not very important in the outer corona, but may be appreciable in the inner corona and the chromosphere. The excited-state populations are much more strongly affected by the electron density. Very strong population inversions arise, but thermal Doppler shifts seem to be too large for lasing to occur in the corona. The photospheric radiation field is shown to have a relatively small effect on coronal ions.

JAY M. PASACHOFF


Measurements with a pencil-beam antenna about 3 arc min across give a polarization of about 2% originating in extended plage areas. This is a lower limit, because the beam width averages out left- and right-circularly polarized components. The data are analyzed in accordance with the magnetoionic theory; an electron temperature of 8500 K is found for layers below 10000 km.

JAY M. PASACHOFF


High-resolution rocket spectra have been photographed of solar Ly\(\alpha\), Si\(\text{III}\) at 1206.52 Å, and O\(\text{I}\) at 1302–1306 Å; the profiles were corrected for instrumental broadening. The Ly\(\alpha\) profile was scanned with a microphotometer slit corresponding to 10 arc sec \( \times \) 3 arc min in order to compare quiet and active regions. The profile has broad wings, a wide, shallow reversal formed in the chromosphere, and a deep, narrow telluric reversal. The equivalent width is 0.59 Å. There is some evidence of self-reversal in the O\(\text{I}\) triplet, with plate noise and uncertainties in the assumed instrumental profile restricting the conclusion. The Si\(\text{III}\) line is not reversed.

JAY M. PASACHOFF