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ABSTRACTS

Solar disk is necessary to distinguish physical change from other types of solar variability. For example, the discovery at SCLERA of differences in the solar limb darkening function between equator and pole made possible a visual oblateness determination with minimal interference from other solar effects. Therefore, programs which propose to accurately measure intrinsic solar diameters must not only guard against the classical systematics mentioned earlier, but must be prepared to detect changes in other aspects of the sun, particularly at the extreme limb. Partial support of this work has been provided by NSF, DOE, NASA, and AFOSR.

In the pulsating sun, CO band fluctuations indicating an influence of 5 minute oscillations upon the temperature minimum region will be contrasted with recent near IR continuum evidence for moving waves in the low chromosphere.

In the active sun, enhancement of far IR radiation is seen over active regions in approximate coincidence with Ca II plage regions and predictions have been made of far IR continuum enhancement following solar flares.

Concluding remarks will focus upon possible future directions of solar IR observations, including the advantage of continuous monitoring of IR images of the sun, and possible new eclipse observations at IR wavelengths.


This review will attempt to highlight recent infrared solar measurements which have contributed to our knowledge of the structure and behavior of the sun and try to indicate areas in which further progress can be made in this field in the future.

In the quiet sun, far IR spectral measurements have helped to establish the brightness temperature near the temperature minimum. Eclipse photometry at these wavelengths has joined disk-scanning measurements in casting significant doubt upon earlier airborne eclipse observations of an intense and narrow limb spike, and has reinforced the evidence for substantial inhomogeneity in the low chromosphere. A chromospheric or coronal origin has been suggested for the recent intriguing observation of several sharp emission lines in the intermediate IR.


The art of obtaining optical measurements of solar magnetic fields is critically reviewed. Because "measurement" implies interpreted observations the review includes a discussion of the present state of instrumentation, the results of observations, and the ability of theory to interpret the observations. Measurements of field directions in the corona are promising, but imperfect. Vector fields are genuinely obtainable in prominences. Disk magnetic field measurements are in a state of disarray. A program aimed at answering criticisms and at obtaining substantial improvement in solar magnetic field measurements is presented and discussed.