SKY EMISSION SPECTRA IN THE INFRARED

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ABSTRACT

Both the day and night sky have intense, narrow line, emissions in the infrared. This complex structure of vibration-rotation bands arises from the naturally occurring, infrared active, molecules present in the atmosphere (sky). Laser receivers should be designed recognizing the fact that a large number of narrow emission lines do exist in the spectrum of the clear sky. Recent high spectral resolution data have been taken of the clear sky. The spectral region from 700 to 1300 cm^{-1} was observed with a working spectral resolution of 0.5 cm^{-1} A high performance interferometer spectrometer was used for these measurements. From a LIDAR point of view, the fully developed 10.6 micron CO_2 band is seen in emission. These data will be presented and the techniques used for the measurements will be discussed. A comparison of the field data with a computer simulation for the same experimental conditions will be made.