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Developing spectroscopic parameters for characterizing planetary atmospheres

L. Rothman

Harvard-Smithsonian Center for Astrophysics, Atomic and Molecular Physics Division, 60 Garden St, Cambridge MA 02138, USA (lrothman@cfa.harvard.edu)

The HITRAN molecular spectroscopic database has been in existence for over three decades. However, until recently the priority and emphasis has been on the principal terrestrial atmospheric absorbers. While HITRAN covers a vast spectral range from the microwave through ultraviolet, the majority of the high quality data have been in the long-wave regions. Enhancements of the HITRAN database with near infrared and visible bands (both line parameters and cross-sections) that are applicable to planetary atmospheric studies are now an ongoing effort. This includes new molecules and new parameters, such as different foreign gas broadening.

Space-borne instrumentation that is capable of achieving remote-sensing retrievals of exceptional accuracy has recently put increased demands on the quality of HITRAN. An issue that is being addressed is obtaining global spectral consistency. Some current validations will be discussed.