Geophysical Research Abstracts,
Vol. 10, EGU2008-A-00650, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-00650
EGU General Assembly 2008

Present status of methane spectroscopy for planetary applications

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The advent of recent space missions like Cassini-Huygens, as well a of new ground-based observations, has led to a renewed interest in reliable models of the absorption spectrum of methane. CH_4 is the main absorber in Titan's thick atmosphere. Although the models developed in the Dijon group still do not allow sufficently reliable simulations above 5000 cm-1 to reproduce all the recent data (such as Huygens/DISR spectra, for instance), the methane coefficients in the 0-4800 cm-1 region have contributed to a better understanding of various ground- and spaced-based data. The present status of methane line-by-line analyses will be discussed, as well as the perspectives for further investigations. Regions where data are still missing on the one hand, and problems with the present models one the other had, will also be reviewed.