COLLISION-INDUCED ABSORPTION (CIA) SPECTRUM OF H_2 IN THE 500 – 1400 cm^{-1}REGION AT LOW TEMPERATURES MEASURED AT THE AILES BEAMLINE, SYNCHROTRON SOLEIL

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Gas giant planets are predominantly composed of H_2, and H_2-H_2 collision-induced absorption (CIA) is the major source of their atmospheric opacity below 800 $cm^{-1}$and also plays a significant role near 1200 cm^{-1}as well. Interpretation of satellite and ground-based planetary spectra relies on the widely accepted Borysow CIA model calculations. It has long been noted that planetary spectra above 600 $cm^{-1}$are not well matched using this CIA model. Thus we conducted a laboratory study to measure the CIA of H_2-H_2 in the broad spectral region at the AILES beamline, Synchrotron Soleil, France. We obtained a series of spectra of pure H_2 at various pressures and temperatures in the range 112 - 118 K using the multi-reflection absorption cell coupled to a Fourier-transform spectrometer. Details of the experimental procedure and preliminary results are presented. The measurement uncertainty is discussed, and a comparison of these results to the Borysow model of H_2 CIA will be presented.[a]

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