BAND OSCILLATOR STRENGTHS OF THE $\tilde{C} - \tilde{X}$ AND $\tilde{F}$ - $\tilde{X}$ BANDS OF H_2O

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Several astronomers have recently performed searches using the Hubble Space Telescope for absorption at vacuum ultraviolet wavelengths by H_2O in translucent interstellar clouds. Both quantitative interpretation of these observations and photochemical modelling of H_2O in such clouds require accurate photoabsorption cross section data. We have studied absorption by H_2O at the Photon Factory of KEK in Japan. A 6.65-m, normal incidence, vacuum spectrometer equipped with a focal plane scanner and entrance and exit slits of $10 \pm 2\,\mu$m was used to provide high spectral resolution. The reciprocal dispersion was 0.24 and 0.30 Å/mm in the fifth and fourth orders, respectively, of a 1200 *l*/mm grating blazed at 5500 Å. A zero-dispersion predisperser was used in the first order to eliminate higher order radiation. The absorption cross sections were measured at room temperature and on water vapor cooled in a supersonic jet expansion to temperatures close to those of interstellar molecules. High resolution cross sections and band oscillator strengths will be presented and compared with calculations based on the model Hamiltonian of Gilbert *et al.*[a].

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[a] R. D. Gilbert, M. S. Child, and J. W. C. Johns, Molec. Phys. **74**, 473 (1991)