HIGH RESOLUTION MID-INFRARED SPECTROSCOPY OF D_2O^+

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We have observed the mid-infrared absorption spectra of D_2O^+ using a tunable lead-salt diode laser spectrometer with velocity-modulation technique. The D_2O^+ ions were generated in a water-cooled discharge of a mixture of D_2O and helium. Spectra were collected in the region between 1000 and 1150 cm^{-1}. Totally 64 lines were assigned to the ν_2 fundamental band of D_2O^+ ($\tilde{X}^2B_1$). Precise molecular constants have been determined.