ROTATIONAL LINE STRENGTHS FOR THE 1.27 μm $a\,^1\Delta_g \leftarrow X\,^3\Sigma_g^-$ ELECTRONIC TRANSITION OF O_2

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Accurate line parameters for the near-infrared electronic bands of O_2 are important for atmospheric modeling and remote sensing. Here, we report measurements of the rotational linestrengths and pressure-broadening coefficients for the v=0 $\leftarrow$ 0 component of the $a\,^1\Delta_g \leftarrow X\,^3\Sigma_g^-$ band of O_2 near 7882 cm^{-1}. The measurements have been measured at 0.01 cm-1 resolution and sample pressures from 13 kPa to 101 kPa using a Fourier-transform infrared spectrometer and a White cell with an optical pathlength of 84 m. The rotational lines follow magnetic-dipole selection rules and have intensities proportional to the sample pressure. The resolved rotational structure overlaps the electric-dipole-allowed collision-induced continuum absorption which is due to binary O_2 collisions and which dominates at higher sample pressures. The present measurements will be compared to recent results by other investigators. Efforts are presently underway to determine continuum parameters for the collision-induced background absorption.