SPECTRA AND LINEWIDTHS OF THE LOWEST TRIPLET STATES $^3A_2$ AND $^3B_2$ OF OZONE

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Transitions to the low lying triplet states $^3A_2$ and $^3B_2$ of ozone in the near infrared spectral range (9100 - 10520 cm^{-1}) have been measured recently by Intracavity Laser Absorption Spectroscopy (ICLAS). The obtained high resolution (0.014 cm^{-1}) spectra have been analysed using an Hamiltonian explicitly taking into account spin-rotation and spin-spin coupling. In the course of the analysis the $^3A_2$ and $^3B_2$ states are confirmed to be the upper states in most of these transitions. The ozone molecule shows case (B) coupling behaviour and the obtained molecular parameters are close to predictions from ab initio calculations.
The assignment of single resolved rovibrational lines has been possible in the least congested region of the $^3A_2$ (000) and the (010) absorption spectra and the observed increasing linewidths depending upon the J and K rotational quantum number suggest that none of these triplet states is metastable or long lived. The predissociation may be explained by spin-orbit coupling to a perturber, most likely the electronic groundstate.