The ground state rotational spectrum and ground state rotational torsional spectrum of trans- and cis-crotononitrile are further characterized in the 270-480 GHz frequency range. The A-E splittings due to methyl internal rotation in trans-crotononitrile\(^a\) are not observed in the sub-millimeter spectrum which has been assigned and fit to a semi-rigid rotor Hamiltonian in agreement with previous work\(^b\). For cis-crotononitrile over 380 transitions are now assigned to this conformation, twice the number previously reported. Internal rotation splittings are observed throughout the \(^6R\)-branches and have been assigned for \(J > 30\). The A-E spectrum fits reasonably well in an internal axis system, but strong correlation between \(D_{ab}\) and the rotational constants indicates that a rotated internal axis system may suit the data better.
