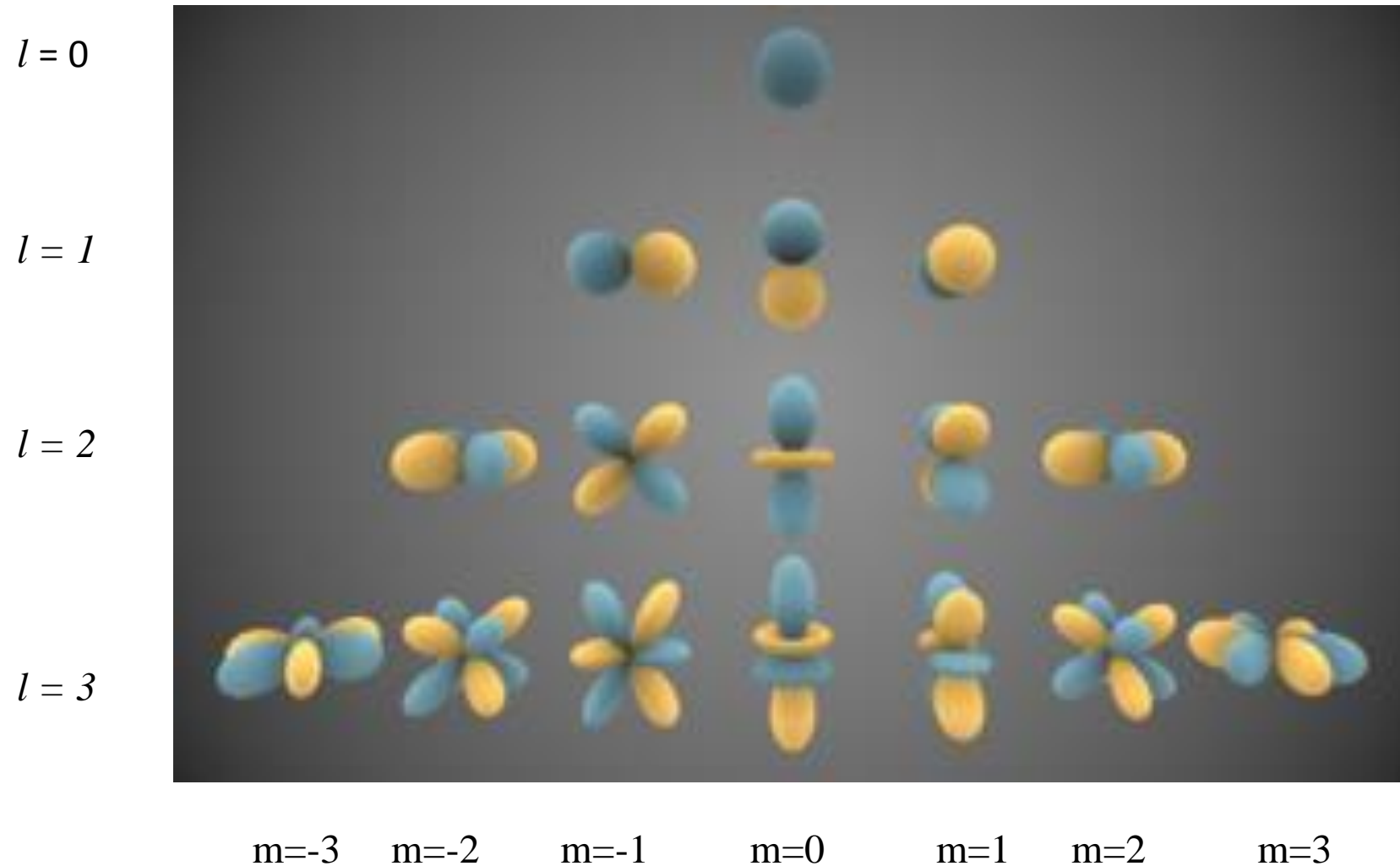
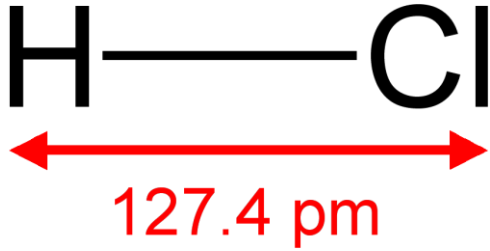


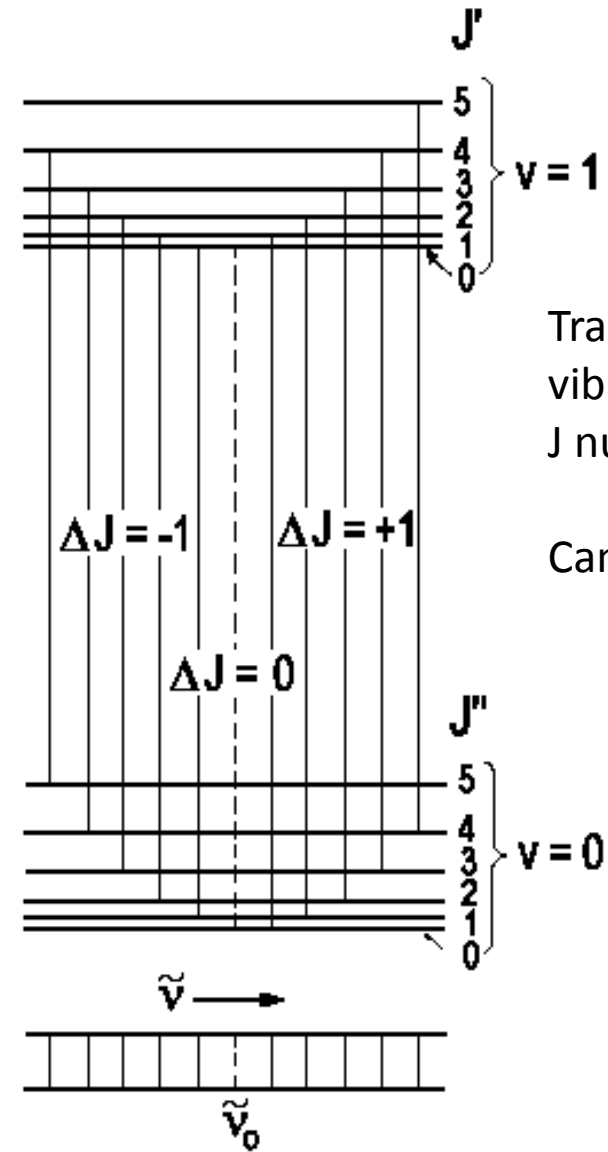
The Spherical Harmonics – Eigenfunctions of L^2 & L_z



Rotational spectrum of HCl

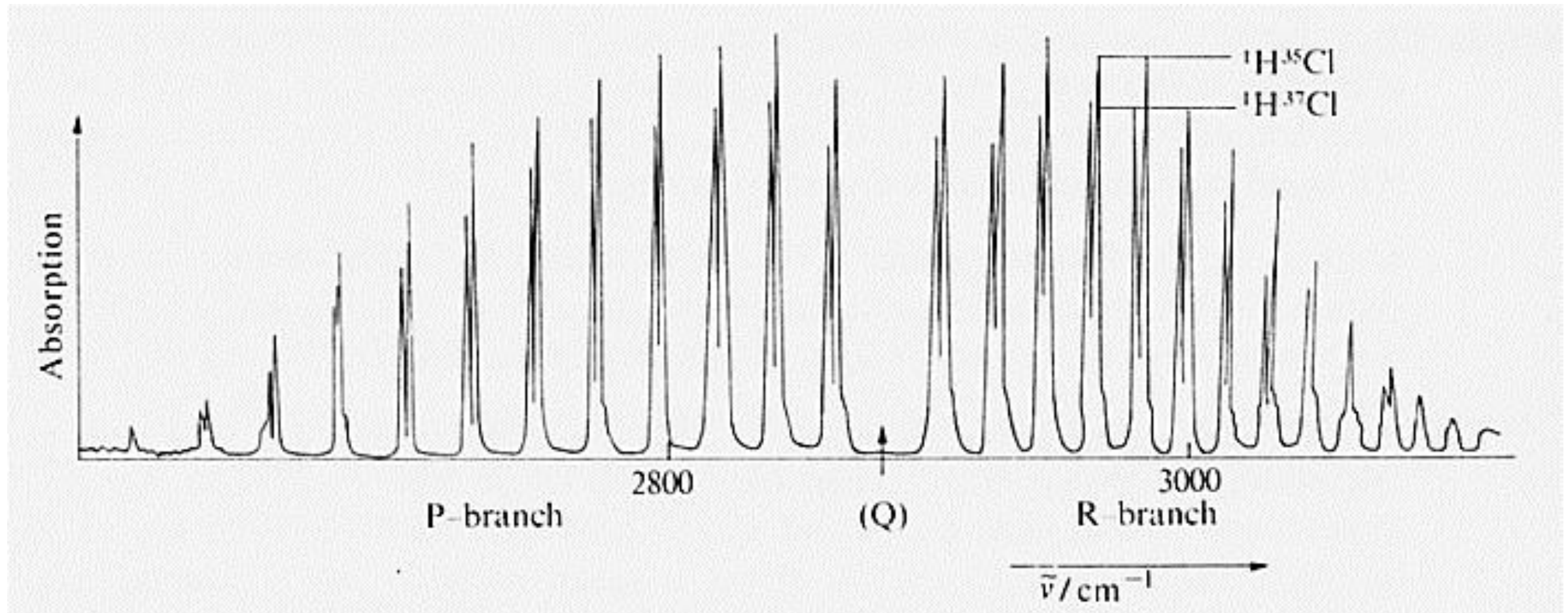


A diatomic molecule which is a good approximation to a rigid rotor



Transitions to different vibrational states with different J numbers can occur.

Can change J by -1, 0, +1



Spectrum (in frequency units cm^{-1}) for HCl. Showing R branch ($\Delta J=+1$) and P branch ($\Delta J=-1$) and different isotopes