Spherical Harmonics: Addendum

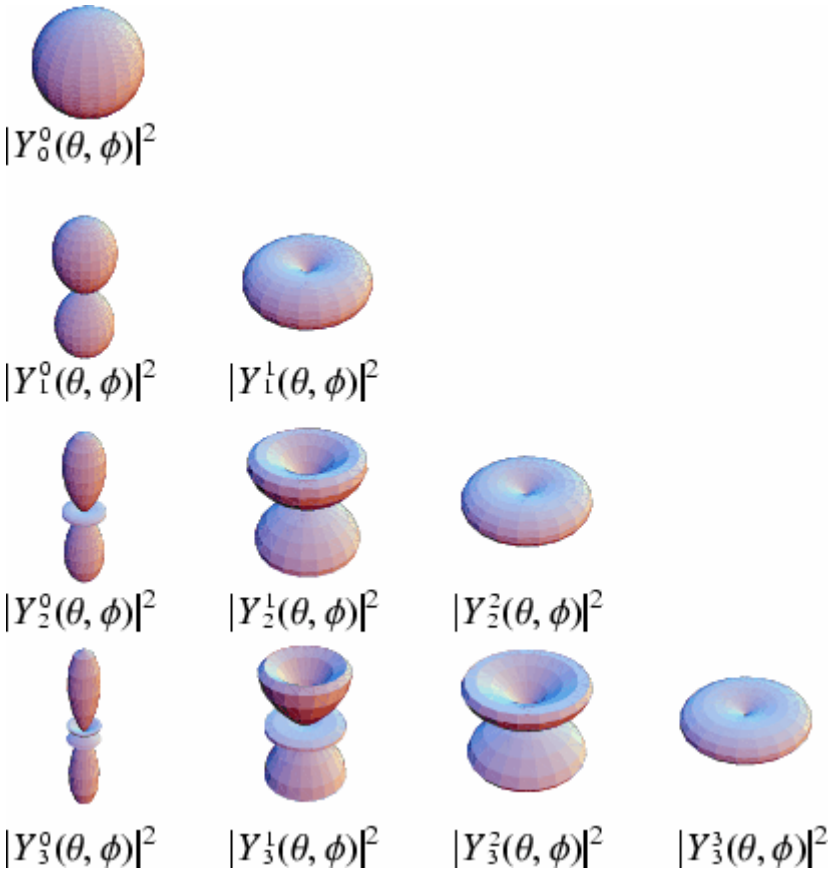

Figure 1: Modulus-squared of some spherical harmonics. Note that any difference in the complex part of Y_l^m between $-m_l$ and $+m_l$ values disappears when we take the modulus squared.

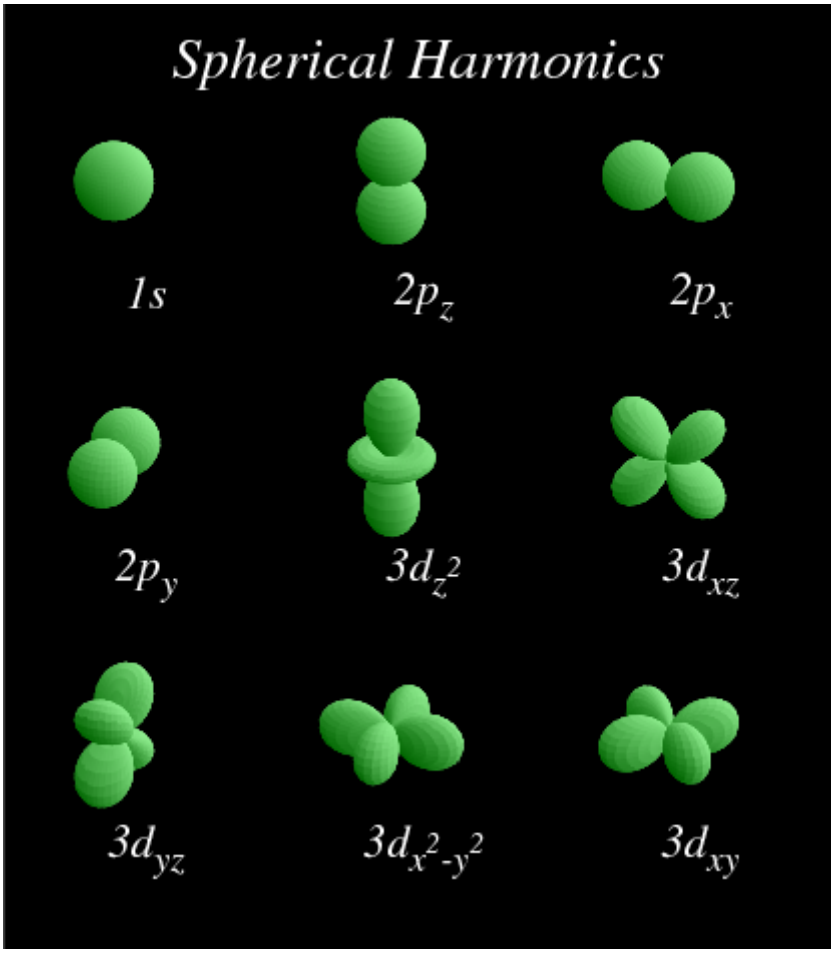

Figure 2: Modulus squared of common orbitals in Chemistry. Linear combinations of different spherical harmonics, Y_l^m, give rise to these orbitals, e.g.

$$p_z = Y_1^0,\ p_x = \frac{1}{\sqrt{2}}\left\{Y_1^1 - Y_1^{-1}\right\},\ p_y = \frac{1}{i\sqrt{2}}\left\{Y_1^1 + Y_1^{-1}\right\}$$