

QUANTUM MECHANICS A (SPA-5319)

Spherical Harmonics

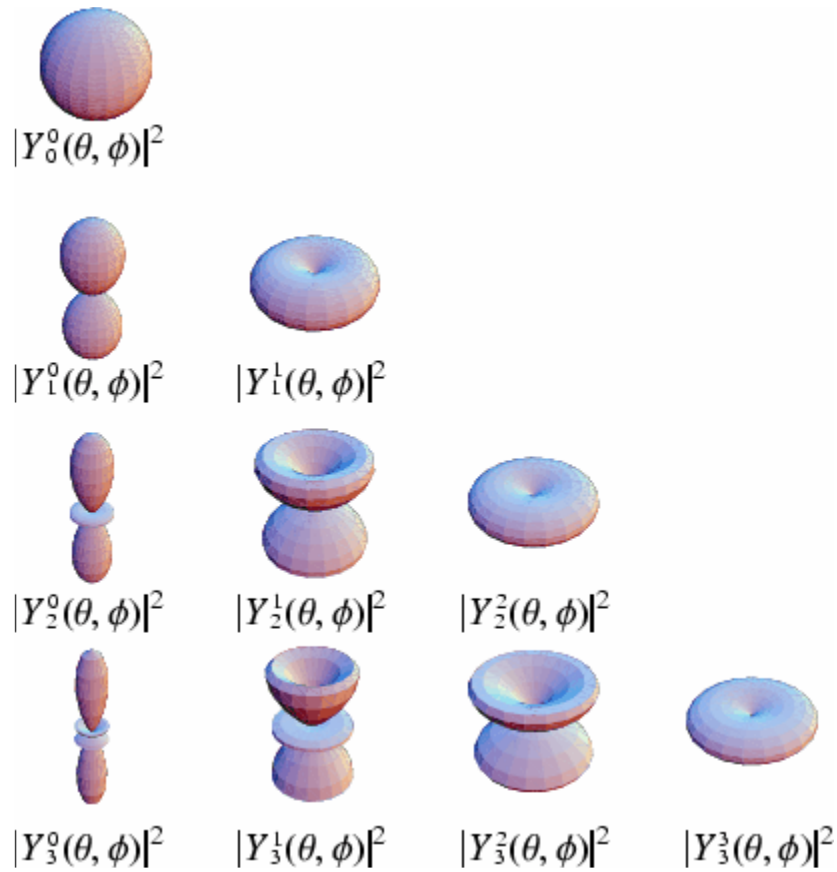


Figure 1: *Modulus-squared of some spherical harmonics. Note that any difference in the complex part of Y_l^m between $-m_l$ and $+m_l$ values disappears when we take the modulus squared.*

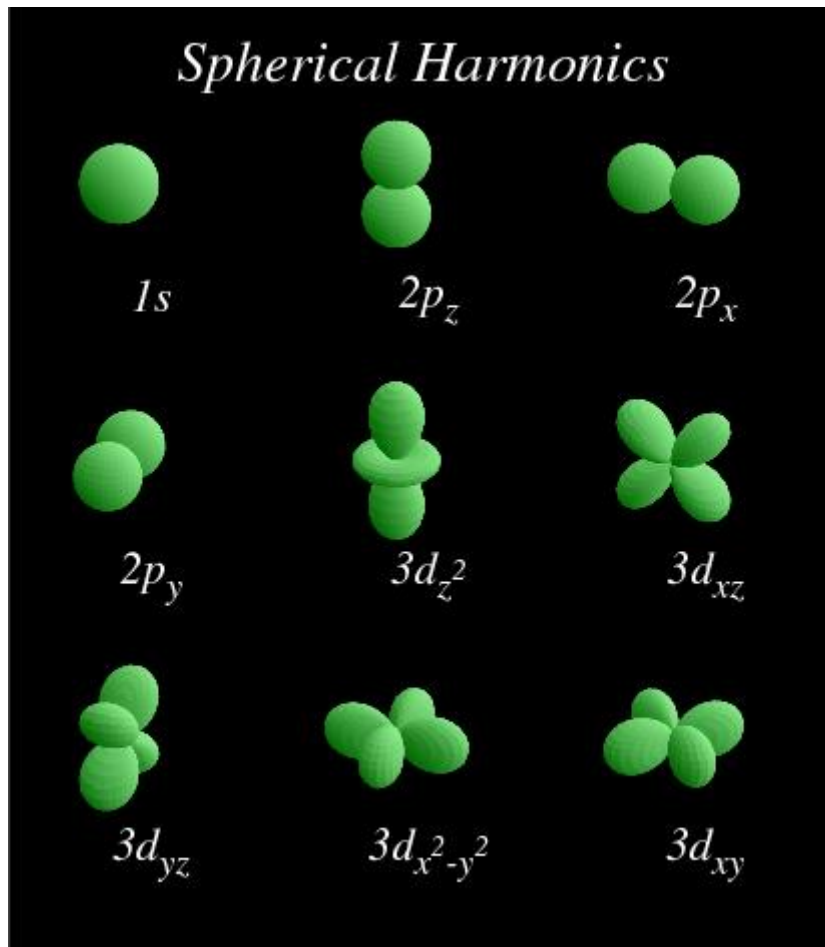


Figure 2: *Modulus squared of common orbitals in Chemistry. Linear combinations of different spherical harmonics, Y_l^m , give rise to these orbitals, e.g.*

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