polinomis de laguerre

$$L_n^m(x) = \sum_{k=0}^{n-m} (-1)^k \binom{n}{k+m} \frac{1}{k!} x^k = \sum_{k=0}^{n-m} (-1)^k \frac{n!}{(n-m-k)!(k+m)!k!} x^k$$

$$L_p^q(x) = c_0 \sum_{j=0}^{p} \frac{(-1)^j (p+q)!}{(p-j)!(q+j)!j!} x^j \qquad (2)$$

$$L_{n-l-1}^{2l+1}(2\rho)$$

$$L_{n-l-1}^{2l+1}(2\rho) = \sum_{j=0}^{n-l-1} \frac{(-1)^j 2^j (n+l)!}{(n-l-j-1)!(2l+j+1)!j!} \rho^j \qquad (34)$$

orbitals atomics

$$\psi_{n\ell m}(r,\vartheta,\varphi) = \sqrt{\left(\frac{2}{na_0}\right)^3 \frac{(n-\ell-1)!}{2n[(n+\ell)!]^3}} e^{-\rho/2} \rho^\ell L_{n-\ell-1}^{2\ell+1}(\rho) Y_\ell^m(\vartheta,\varphi)$$

$$\phi(p,\vartheta_p,\varphi_p) = \sqrt{\frac{2}{\pi}\frac{(n-l-1)!}{(n+l)!}} n^2 2^{2l+2} l! \frac{n^l p^l}{(n^2p^2+1)^{l+2}} C_{n-l-1}^{l+1}\left(\frac{n^2p^2-1}{n^2p^2+1}\right) Y_l^m(\vartheta_p,\varphi_p),$$

$$\Phi(\phi) = e^{im\phi} \qquad \Theta(\theta) = AP_l^m[cos(\theta)]$$

on A es una constant i P es la funcio saaociada de Legendre

$$P_l^m(x) = (1-x^2)^{|m|/2} \left(\frac{d}{dx}\right)^{|m|} P_l(x)$$

$$Y_l^m(\theta,\phi) = \epsilon \sqrt{\frac{(2l+1)}{4\pi}\frac{(l-|m|)!}{(l+|m|)!}} e^{im\phi} P_l^m[cos(\theta)]$$

$$\epsilon = (-1)^m \ \text{ para } m \geq 0$$

$$\epsilon = 1 \ \text{ para } m \leq 0$$