

The n th degree, m th order associated legendre function is defined as

$$P_n^m(\mu) = \alpha_n^m D^{m+n}(\mu^2 - 1)^n$$
$$\alpha_n^m = \sqrt{(2 - \delta_{m0}) \frac{(n - m)!}{(n + m)!} \frac{1}{2^n n!}} (1 - \mu^2)^{m/2}$$