

$$P_0^0$$

$$P_1^0 \quad P_1^1$$

$$\downarrow$$

$$P_2^0 \quad P_2^1 \rightarrow P_2^2$$

$$\downarrow$$

$$P_3^0 \quad P_3^1 \rightarrow P_3^2 \rightarrow P_3^3$$

$$\downarrow$$

$$P_4^0 \quad P_4^1 \rightarrow P_4^2 \rightarrow P_4^3 \rightarrow P_4^4$$

$$\downarrow$$

$$P_5^0 \quad P_5^1 \rightarrow P_5^2 \rightarrow P_5^3 \rightarrow P_5^4 \rightarrow P_5^5$$

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

$$P_n^m(\mu) = \alpha_n^m D^{m+n}(\mu^2 - 1)^n$$

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