44. CLEBSCH-GORDAN COEFFICIENTS, SPHERICAL HARMONICS, AND d FUNCTIONS

Note: A square-root sign is to be understood over every coefficient, e.g., for $-8/15$ read $-\sqrt{8}/15$.

\[ Y_{0}^{m} = \sqrt{\frac{3}{4\pi}} \cos \theta \]
\[ Y_{1}^{m} = -\sqrt{\frac{1}{2\pi}} \sin \theta e^{im\phi} \]
\[ Y_{2}^{m} = \frac{1}{2\sqrt{5}} \sin \theta e^{2im\phi} \]

\[ d_{m,0}^{j} = \sqrt{\frac{2j+1}{4\pi}} Y_{0}^{m} \]

\[ Y_{-m}^{-m} = (-1)^{m} Y_{m}^{+m} \]

\[ d_{m,m'}^{j} = d_{j,m,m'}^{m} = d_{j,-m,-m'}^{d} \]

\[ \langle j_1 j_2 m_1 m_2 | j_1 j_2 J M \rangle = (-1)^{j_1+j_2-j_1 j_2 m_1 m_2} \]

\[ d_{m,0}^{j} = \cos \theta \]
\[ d_{1/2,-1/2}^{1/2} = \cos \theta \]
\[ d_{1/1}^{1} = \frac{1 + \cos \theta}{2} \]

\[d_{3/2}^{3/2} = \frac{1 + \cos \theta}{2} \]
\[d_{3/2,1/2}^{3/2} = \frac{1}{2} \cos \theta \]
\[d_{3/2,3/2}^{3/2} = \frac{1}{2} \sin \theta \]

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