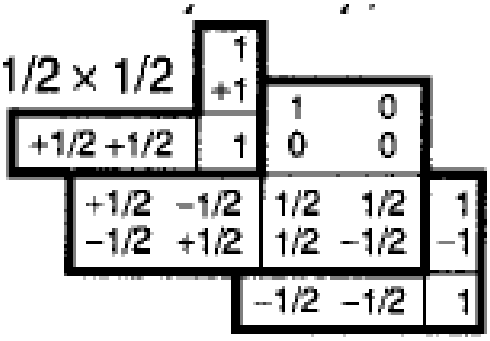
Physics 402
Fall 2022
Prof. Anlage
Discussion Worksheet for 19 September, 2022

1. The Clebsch-Gordan coefficients allow us to go back and forth between the "coupled" and "un-coupled" wavefunctions for multiple-spin systems. Consider two spin-1/2 particles described by kets $\left|\frac{1}{2}\, m_1\right\rangle$ and $\left|\frac{1}{2}\, m_2\right\rangle$. Using Table 4.8 on page 179 of Griffiths, write down all of the possible states in the coupled representation in terms of the uncoupled single-particle kets. There are 4 possible coupled states, consisting of a "triplet" and a "singlet".



2. Consider again two spin-1/2 particles. Using Table 4.8 on page 179 of Griffiths, write down the uncoupled single-particle wavefunctions in terms of the coupled kets $\left| s\ m_s \right\rangle$.