Příloha A

Tabulky CG koeficientů

CG koeficienty $(j_1, j_2, m_1, m_2 | j, m)$ jsou rovny nule pokud nejsou splněna výběrová pravidla

$$m_1 + m_2 = m, \quad |j_1 - j_2| \leq j \leq j_1 + j_2.$$

V tabulkách jsou uvedené CG koeficienty pro $m > 0$. Ostatní je snadné dopočítat díky symetrii vůči záměně $j_1 \leftrightarrow j_2$, $m_1 \leftrightarrow m_2$, resp. znamének m_i a m

$$
\begin{aligned}
(j_1, j_2, m_1, m_2 | j, m) &= (-1)^{j_1 + j_2 - j}(j_2, j_1, m_2, m_1 | j, m) \\
&= (-1)^{j_1 + j_2 - j}(j_1, j_2, -m_1, -m_2 | j, -m) \\
&= (j_2, j_1, -m_2, -m_1 | j, -m).
\end{aligned}
$$

$m = j_1 + j_2$:

$$(j_1, j_2, j_1, j_2 | j_1 + j_2, j_1 + j_2) = 1.$$

$j_2 = 0$:

$$(j_1, 0, m_1, 0 | j, m) = \delta_{j, j_1} \delta_{m, m_1}.$$

$j = 0$:

$$(j_1, j_2, m_1, m_2 | 0, 0) = \frac{(-1)^{j_1 + m_1}}{\sqrt{2 j_1 + 1}} \delta_{j_1, j_2} \delta_{m_1, -m_2}.$$

$j_1 = \frac{1}{2}$, $j_2 = \frac{1}{2}$:

$m = 0$		
m_1, m_2 ╲ j	1	0
$\frac{1}{2}, -\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{2}}$
$-\frac{1}{2}, \frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$-\frac{1}{\sqrt{2}}$

$j_1 = 1, j_2 = \frac{1}{2}$:

$m = 1/2$		
j m_1, m_2	$\frac{3}{2}$	$\frac{1}{2}$
$1, -\frac{1}{2}$	$\frac{1}{\sqrt{3}}$	$\sqrt{\frac{2}{3}}$
$0, \frac{1}{2}$	$\sqrt{\frac{2}{3}}$	$-\frac{1}{\sqrt{3}}$

$j_1 = 1, j_2 = 1$:

$m = 1$		
j m_1, m_2	2	1
$1, 0$	$\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{2}}$
$0, 1$	$\frac{1}{\sqrt{2}}$	$-\frac{1}{\sqrt{2}}$

$m = 0$			
j m_1, m_2	2	1	0
$1, -1$	$\frac{1}{\sqrt{6}}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{3}}$
$0, 0$	$\sqrt{\frac{2}{3}}$	0	$-\frac{1}{\sqrt{3}}$
$-1, 1$	$\frac{1}{\sqrt{6}}$	$-\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{3}}$

$j_1 = l, j_2 = \frac{1}{2}$:

$$\left(l, \frac{1}{2}, m + \frac{1}{2}, -\frac{1}{2} \middle| l \pm \frac{1}{2}, m \right) = \sqrt{\frac{l \mp m + \frac{1}{2}}{2l + 1}},$$

$$\left(l, \frac{1}{2}, m - \frac{1}{2}, \frac{1}{2} \middle| l \pm \frac{1}{2}, m \right) = \pm\sqrt{\frac{l \pm m + \frac{1}{2}}{2l + 1}}$$

$j_2 = 1, m_2 = 0$:

$$(j_1, 1, m, 0| j_1 + 1, m) = \sqrt{\frac{(j_1 - m + 1)(j_1 + m + 1)}{(2j_1 + 1)(j_1 + 1)}},$$

$$(j_1, 1, m, 0| j_1, m) = \frac{m}{\sqrt{j_1(j_1 + 1)}},$$

$$(j_1, 1, m, 0| j_1 - 1, m) = -\sqrt{\frac{(j_1 - m)(j_1 + m)}{j_1(2j_1 + 1)}}$$