The $2p^{1/2}$ and $2p^{3/2}$ coefficients constructed using the Clebsch-Gordan (CG) coefficients

$$\begin{aligned}
|2p^{1/2}, m_j = \frac{1}{2}\rangle &= \sqrt{\frac{2}{3}}|2p, m = 1\rangle|\downarrow\rangle - \sqrt{\frac{1}{3}}|2p, m = 0\rangle|\uparrow\rangle \\
|2p^{3/2}, m_j = \frac{3}{2}\rangle &= |2p, m = 1\rangle|\uparrow\rangle \\
|2p^{3/2}, m_j = \frac{1}{2}\rangle &= \sqrt{\frac{1}{3}}|2p, m = 1\rangle|\downarrow\rangle + \sqrt{\frac{2}{3}}|2p, m = 0\rangle|\uparrow\rangle
\end{aligned} \tag{1}$$

By symmetry, the other wavefunctions with m_j negative are:

$$\begin{aligned}
|2p^{1/2}, m_j = -\frac{1}{2}\rangle &= \sqrt{\frac{2}{3}}|2p, m = -1\rangle|\uparrow\rangle - \sqrt{\frac{1}{3}}|2p, m = 0\rangle|\downarrow\rangle \\
|2p^{3/2}, m_j = -\frac{3}{2}\rangle &= |2p, m = -1\rangle|\downarrow\rangle \\
|2p^{3/2}, m_j = -\frac{1}{2}\rangle &= \sqrt{\frac{1}{3}}|2p, m = -1\rangle|\uparrow\rangle + \sqrt{\frac{2}{3}}|2p, m = 0\rangle|\downarrow\rangle
\end{aligned} \tag{2}$$

A generic form for any core levels coupled to spin 1/2 is

$$|jm_j\rangle = \sum_{\Delta m = \pm\frac{1}{2}(\uparrow,\downarrow)} C^{jm_j}_{lm\frac{1}{2}\frac{1}{2}}|l, m = m_j - \Delta m\rangle|\Delta m\rangle \tag{3}$$

The wavefunctions included in the *.pos file are $\langle\phi_l|r_i|2p, m\rangle(i = x, y, z, m = -1, 0, +1)$ so we just need to plug in these coefficients to obtain $\langle\phi_l|r_i|jm_j\rangle$