$$\left|\frac{1}{2},\frac{1}{2},1,-1\right\rangle = \left|\frac{1}{2},\frac{1}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{1}{2},\frac{1}{2},1,0\right\rangle = \sqrt{\frac{1}{2}}\left|\frac{1}{2},\frac{1}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{1}{2},\frac{1}{2},1,1\right\rangle = \left|\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\rangle$$

$$\left|\frac{1}{2},\frac{1}{2},0,0\right\rangle = -\sqrt{\frac{1}{2}}\left|\frac{1}{2},\frac{1}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{1}{2},\frac{1}{2},\frac{1}{2},\frac{-1}{2}\right\rangle$$

$$\left|1,\frac{1}{2},\frac{3}{2},\frac{-3}{2}\right\rangle = \left|1,\frac{1}{2},-1,\frac{-1}{2}\right\rangle$$

$$\left|1,\frac{1}{2},\frac{3}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{1}{3}}\left|1,\frac{1}{2},-1,\frac{1}{2}\right\rangle + \sqrt{\frac{2}{3}}\left|1,\frac{1}{2},0,\frac{-1}{2}\right\rangle$$

$$\left|1,\frac{1}{2},\frac{3}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{2}{3}}\left|1,\frac{1}{2},0,\frac{1}{2}\right\rangle + \sqrt{\frac{1}{3}}\left|1,\frac{1}{2},1,\frac{-1}{2}\right\rangle$$

$$\left|1,\frac{1}{2},\frac{3}{2},\frac{3}{2}\right\rangle = \left|1,\frac{1}{2},1,\frac{1}{2}\right\rangle$$

$$\left|1,\frac{1}{2},\frac{1}{2},\frac{-1}{2}\right\rangle = -\sqrt{\frac{2}{3}}\left|1,\frac{1}{2},-1,\frac{1}{2}\right\rangle + \sqrt{\frac{1}{3}}\left|1,\frac{1}{2},0,\frac{-1}{2}\right\rangle$$

$$\left|1,\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\rangle = -\sqrt{\frac{1}{3}}\left|1,\frac{1}{2},0,\frac{1}{2}\right\rangle + \sqrt{\frac{2}{3}}\left|1,\frac{1}{2},1,\frac{-1}{2}\right\rangle$$

$$|1,1,2,-2\rangle = |1,1,-1,-1\rangle$$

$$|1,1,2,-1\rangle = \sqrt{\frac{1}{2}}\,|1,1,-1,0\rangle + \sqrt{\frac{1}{2}}\,|1,1,0,-1\rangle$$

$$|1,1,2,0\rangle = \sqrt{\frac{1}{6}}\,|1,1,-1,1\rangle + \sqrt{\frac{2}{3}}\,|1,1,0,0\rangle + \sqrt{\frac{1}{6}}\,|1,1,1,-1\rangle$$

$$|1,1,2,1\rangle = \sqrt{\frac{1}{2}}\,|1,1,0,1\rangle + \sqrt{\frac{1}{2}}\,|1,1,1,0\rangle$$

$$|1,1,2,2\rangle = |1,1,1,1\rangle$$

$$|1,1,0,0\rangle = \sqrt{\frac{1}{3}}\,|1,1,-1,1\rangle - \sqrt{\frac{1}{3}}\,|1,1,0,0\rangle + \sqrt{\frac{1}{3}}\,|1,1,1,-1\rangle$$

$$\left|\frac{3}{2},\frac{1}{2},2,-2\right\rangle = \left|\frac{3}{2},\frac{1}{2},\frac{-3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{1}{2},2,-1\right\rangle = \sqrt{\frac{1}{4}}\left|\frac{3}{2},\frac{1}{2},\frac{-3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{3}{4}}\left|\frac{3}{2},\frac{1}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{1}{2},2,0\right\rangle = \sqrt{\frac{1}{2}}\left|\frac{3}{2},\frac{1}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{3}{2},\frac{1}{2},\frac{1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{1}{2},2,1\right\rangle = \sqrt{\frac{3}{4}}\left|\frac{3}{2},\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{4}}\left|\frac{3}{2},\frac{1}{2},\frac{3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{1}{2},2,2\right\rangle = \left|\frac{3}{2},\frac{1}{2},\frac{3}{2},\frac{1}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{1}{2},1,-1\right\rangle = -\sqrt{\frac{3}{4}}\left|\frac{3}{2},\frac{1}{2},\frac{-3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{4}}\left|\frac{3}{2},\frac{1}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{1}{2},1,0\right\rangle = -\sqrt{\frac{1}{2}}\left|\frac{3}{2},\frac{1}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{3}{2},\frac{1}{2},\frac{1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{1}{2},1,1\right\rangle = -\sqrt{\frac{1}{4}}\left|\frac{3}{2},\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{3}{4}}\left|\frac{3}{2},\frac{1}{2},\frac{3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{3}{2},1,\frac{5}{2},\frac{-5}{2}\right\rangle = \left|\frac{3}{2},1,\frac{-3}{2},-1\right\rangle$$

$$\left|\frac{3}{2},1,\frac{5}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{2}{5}}\left|\frac{3}{2},1,\frac{-3}{2},0\right\rangle + \sqrt{\frac{3}{5}}\left|\frac{3}{2},1,\frac{-1}{2},-1\right\rangle$$

$$\left|\frac{3}{2},1,\frac{5}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{1}{10}}\left|\frac{3}{2},1,\frac{-3}{2},1\right\rangle + \sqrt{\frac{3}{5}}\left|\frac{3}{2},1,\frac{-1}{2},0\right\rangle + \sqrt{\frac{3}{10}}\left|\frac{3}{2},1,\frac{1}{2},-1\right\rangle$$

$$\left|\frac{3}{2},1,\frac{5}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{3}{10}}\left|\frac{3}{2},1,\frac{-1}{2},1\right\rangle + \sqrt{\frac{3}{5}}\left|\frac{3}{2},1,\frac{1}{2},0\right\rangle + \sqrt{\frac{1}{10}}\left|\frac{3}{2},1,\frac{3}{2},-1\right\rangle$$

$$\left|\frac{3}{2},1,\frac{5}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{3}{5}}\left|\frac{3}{2},1,\frac{1}{2},1\right\rangle + \sqrt{\frac{2}{5}}\left|\frac{3}{2},1,\frac{3}{2},0\right\rangle$$

$$\left|\frac{3}{2},1,\frac{5}{2},\frac{5}{2}\right\rangle = \left|\frac{3}{2},1,\frac{3}{2},1\right\rangle$$

$$\left|\frac{3}{2},1,\frac{1}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{1}{2}}\left|\frac{3}{2},1,\frac{-3}{2},1\right\rangle - \sqrt{\frac{1}{3}}\left|\frac{3}{2},1,\frac{-1}{2},0\right\rangle + \sqrt{\frac{1}{6}}\left|\frac{3}{2},1,\frac{1}{2},-1\right\rangle$$

$$\left|\frac{3}{2},1,\frac{1}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{1}{6}}\left|\frac{3}{2},1,\frac{-1}{2},1\right\rangle - \sqrt{\frac{1}{3}}\left|\frac{3}{2},1,\frac{1}{2},0\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{3}{2},1,\frac{3}{2},-1\right\rangle$$

$$\left|\frac{3}{2},\frac{3}{2},3,-3\right\rangle = \left|\frac{3}{2},\frac{3}{2},\frac{-3}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{3}{2},3,-2\right\rangle = \sqrt{\frac{1}{2}}\left|\frac{3}{2},\frac{3}{2},\frac{-3}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{3}{2},\frac{3}{2},\frac{-1}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{3}{2},3,-1\right\rangle = \sqrt{\frac{1}{5}}\left|\frac{3}{2},\frac{3}{2},\frac{-3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{3}{5}}\left|\frac{3}{2},\frac{3}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{5}}\left|\frac{3}{2},\frac{3}{2},\frac{1}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{3}{2},3,0\right\rangle = \sqrt{\frac{1}{20}}\left|\frac{3}{2},\frac{3}{2},\frac{-3}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{9}{20}}\left|\frac{3}{2},\frac{3}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{9}{20}}\left|\frac{3}{2},\frac{3}{2},\frac{1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{20}}\left|\frac{3}{2},\frac{3}{2},\frac{3}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{3}{2},3,1\right\rangle = \sqrt{\frac{1}{5}}\left|\frac{3}{2},\frac{3}{2},\frac{-1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{3}{5}}\left|\frac{3}{2},\frac{3}{2},\frac{1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{5}}\left|\frac{3}{2},\frac{3}{2},\frac{3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{3}{2},3,2\right\rangle = \sqrt{\frac{1}{2}}\left|\frac{3}{2},\frac{3}{2},\frac{1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{3}{2},\frac{3}{2},\frac{3}{2},\frac{1}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{3}{2},3,3\right\rangle = \left|\frac{3}{2},\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\rangle$$

$$\left|\frac{3}{2},\frac{3}{2},0,0\right\rangle = -\sqrt{\frac{1}{4}}\left|\frac{3}{2},\frac{3}{2},\frac{-3}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{1}{4}}\left|\frac{3}{2},\frac{3}{2},\frac{-1}{2},\frac{1}{2}\right\rangle - \sqrt{\frac{1}{4}}\left|\frac{3}{2},\frac{3}{2},\frac{1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{4}}\left|\frac{3}{2},\frac{3}{2},\frac{3}{2},\frac{-3}{2}\right\rangle$$

$$\left|2,\frac{1}{2},\frac{5}{2},\frac{-5}{2}\right\rangle = \left|2,\frac{1}{2},-2,\frac{-1}{2}\right\rangle$$

$$\left|2,\frac{1}{2},\frac{5}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{1}{5}}\left|2,\frac{1}{2},-2,\frac{1}{2}\right\rangle + \sqrt{\frac{4}{5}}\left|2,\frac{1}{2},-1,\frac{-1}{2}\right\rangle$$

$$\left|2,\frac{1}{2},\frac{5}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{2}{5}}\left|2,\frac{1}{2},-1,\frac{1}{2}\right\rangle + \sqrt{\frac{3}{5}}\left|2,\frac{1}{2},0,\frac{-1}{2}\right\rangle$$

$$\left|2,\frac{1}{2},\frac{5}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{3}{5}}\left|2,\frac{1}{2},0,\frac{1}{2}\right\rangle + \sqrt{\frac{2}{5}}\left|2,\frac{1}{2},1,\frac{-1}{2}\right\rangle$$

$$\left|2,\frac{1}{2},\frac{5}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{4}{5}}\left|2,\frac{1}{2},1,\frac{1}{2}\right\rangle + \sqrt{\frac{1}{5}}\left|2,\frac{1}{2},2,\frac{-1}{2}\right\rangle$$

$$\left|2,\frac{1}{2},\frac{5}{2},\frac{5}{2}\right\rangle = \left|2,\frac{1}{2},2,\frac{1}{2}\right\rangle$$

$$\left|2,\frac{1}{2},\frac{3}{2},\frac{-3}{2}\right\rangle = -\sqrt{\frac{4}{5}}\left|2,\frac{1}{2},-2,\frac{1}{2}\right\rangle + \sqrt{\frac{1}{5}}\left|2,\frac{1}{2},-1,\frac{-1}{2}\right\rangle$$

$$\left|2,\frac{1}{2},\frac{3}{2},\frac{-1}{2}\right\rangle = -\sqrt{\frac{3}{5}}\left|2,\frac{1}{2},-1,\frac{1}{2}\right\rangle + \sqrt{\frac{2}{5}}\left|2,\frac{1}{2},0,\frac{-1}{2}\right\rangle$$

$$\left|2,\frac{1}{2},\frac{3}{2},\frac{1}{2}\right\rangle = -\sqrt{\frac{2}{5}}\left|2,\frac{1}{2},0,\frac{1}{2}\right\rangle + \sqrt{\frac{3}{5}}\left|2,\frac{1}{2},1,\frac{-1}{2}\right\rangle$$

$$\left|2,\frac{1}{2},\frac{3}{2},\frac{3}{2}\right\rangle = -\sqrt{\frac{1}{5}}\left|2,\frac{1}{2},1,\frac{1}{2}\right\rangle + \sqrt{\frac{4}{5}}\left|2,\frac{1}{2},2,\frac{-1}{2}\right\rangle$$

$$|2,1,3,-3\rangle = |2,1,-2,-1\rangle$$

$$|2,1,3,-2\rangle = \sqrt{\frac{1}{3}}\,|2,1,-2,0\rangle + \sqrt{\frac{2}{3}}\,|2,1,-1,-1\rangle$$

$$|2,1,3,-1\rangle = \sqrt{\frac{1}{15}}\,|2,1,-2,1\rangle + \sqrt{\frac{8}{15}}\,|2,1,-1,0\rangle + \sqrt{\frac{2}{5}}\,|2,1,0,-1\rangle$$

$$|2,1,3,0\rangle = \sqrt{\frac{1}{5}}\,|2,1,-1,1\rangle + \sqrt{\frac{3}{5}}\,|2,1,0,0\rangle + \sqrt{\frac{1}{5}}\,|2,1,1,-1\rangle$$

$$|2,1,3,1\rangle = \sqrt{\frac{2}{5}}\,|2,1,0,1\rangle + \sqrt{\frac{8}{15}}\,|2,1,1,0\rangle + \sqrt{\frac{1}{15}}\,|2,1,2,-1\rangle$$

$$|2,1,3,2\rangle = \sqrt{\frac{2}{3}}\,|2,1,1,1\rangle + \sqrt{\frac{1}{3}}\,|2,1,2,0\rangle$$

$$|2,1,3,3\rangle = |2,1,2,1\rangle$$

$$|2,1,1,-1\rangle = \sqrt{\frac{3}{5}}\,|2,1,-2,1\rangle - \sqrt{\frac{3}{10}}\,|2,1,-1,0\rangle + \sqrt{\frac{1}{10}}\,|2,1,0,-1\rangle$$

$$|2,1,1,0\rangle = \sqrt{\frac{3}{10}}\,|2,1,-1,1\rangle - \sqrt{\frac{2}{5}}\,|2,1,0,0\rangle + \sqrt{\frac{3}{10}}\,|2,1,1,-1\rangle$$

$$|2,1,1,1\rangle = \sqrt{\frac{1}{10}}\,|2,1,0,1\rangle - \sqrt{\frac{3}{10}}\,|2,1,1,0\rangle + \sqrt{\frac{3}{5}}\,|2,1,2,-1\rangle$$

$$\left|2,\frac{3}{2},\frac{7}{2},\frac{-7}{2}\right\rangle = \left|2,\frac{3}{2},-2,\frac{-3}{2}\right\rangle$$

$$\left|2,\frac{3}{2},\frac{7}{2},\frac{-5}{2}\right\rangle = \sqrt{\frac{3}{7}}\left|2,\frac{3}{2},-2,\frac{-1}{2}\right\rangle + \sqrt{\frac{4}{7}}\left|2,\frac{3}{2},-1,\frac{-3}{2}\right\rangle$$

$$\left|2,\frac{3}{2},\frac{7}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{1}{7}}\left|2,\frac{3}{2},-2,\frac{1}{2}\right\rangle + \sqrt{\frac{4}{7}}\left|2,\frac{3}{2},-1,\frac{-1}{2}\right\rangle + \sqrt{\frac{2}{7}}\left|2,\frac{3}{2},0,\frac{-3}{2}\right\rangle$$

$$\left|2,\frac{3}{2},\frac{7}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{1}{35}}\left|2,\frac{3}{2},-2,\frac{3}{2}\right\rangle + \sqrt{\frac{12}{35}}\left|2,\frac{3}{2},-1,\frac{1}{2}\right\rangle + \sqrt{\frac{18}{35}}\left|2,\frac{3}{2},0,\frac{-1}{2}\right\rangle + \sqrt{\frac{4}{35}}\left|2,\frac{3}{2},1,\frac{-3}{2}\right\rangle$$

$$\left|2,\frac{3}{2},\frac{7}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{4}{35}}\left|2,\frac{3}{2},-1,\frac{3}{2}\right\rangle + \sqrt{\frac{18}{35}}\left|2,\frac{3}{2},0,\frac{1}{2}\right\rangle + \sqrt{\frac{12}{35}}\left|2,\frac{3}{2},1,\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{35}}\left|2,\frac{3}{2},2,\frac{-3}{2}\right\rangle$$

$$\left|2,\frac{3}{2},\frac{7}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{2}{7}}\left|2,\frac{3}{2},0,\frac{3}{2}\right\rangle + \sqrt{\frac{4}{7}}\left|2,\frac{3}{2},1,\frac{1}{2}\right\rangle + \sqrt{\frac{1}{7}}\left|2,\frac{3}{2},2,\frac{-1}{2}\right\rangle$$

$$\left|2,\frac{3}{2},\frac{7}{2},\frac{5}{2}\right\rangle = \sqrt{\frac{4}{7}}\left|2,\frac{3}{2},1,\frac{3}{2}\right\rangle + \sqrt{\frac{3}{7}}\left|2,\frac{3}{2},2,\frac{1}{2}\right\rangle$$

$$\left|2,\frac{3}{2},\frac{7}{2},\frac{7}{2}\right\rangle = \left|2,\frac{3}{2},2,\frac{3}{2}\right\rangle$$

$$\left|2,\frac{3}{2},\frac{1}{2},\frac{-1}{2}\right\rangle = -\sqrt{\frac{2}{5}}\left|2,\frac{3}{2},-2,\frac{3}{2}\right\rangle + \sqrt{\frac{3}{10}}\left|2,\frac{3}{2},-1,\frac{1}{2}\right\rangle - \sqrt{\frac{1}{5}}\left|2,\frac{3}{2},0,\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{10}}\left|2,\frac{3}{2},1,\frac{-3}{2}\right\rangle$$

$$\left|2,\frac{3}{2},\frac{1}{2},\frac{1}{2}\right\rangle = -\sqrt{\frac{1}{10}}\left|2,\frac{3}{2},-1,\frac{3}{2}\right\rangle + \sqrt{\frac{1}{5}}\left|2,\frac{3}{2},0,\frac{1}{2}\right\rangle - \sqrt{\frac{3}{10}}\left|2,\frac{3}{2},1,\frac{-1}{2}\right\rangle + \sqrt{\frac{2}{5}}\left|2,\frac{3}{2},2,\frac{-3}{2}\right\rangle$$

$$|2,2,4,-4\rangle = |2,2,-2,-2\rangle$$

$$|2,2,4,-3\rangle = \sqrt{\frac{1}{2}}\,|2,2,-2,-1\rangle + \sqrt{\frac{1}{2}}\,|2,2,-1,-2\rangle$$

$$|2,2,4,-2\rangle = \sqrt{\frac{3}{14}}\,|2,2,-2,0\rangle + \sqrt{\frac{4}{7}}\,|2,2,-1,-1\rangle + \sqrt{\frac{3}{14}}\,|2,2,0,-2\rangle$$

$$|2,2,4,-1\rangle = \sqrt{\frac{1}{14}}\,|2,2,-2,1\rangle + \sqrt{\frac{3}{7}}\,|2,2,-1,0\rangle + \sqrt{\frac{3}{7}}\,|2,2,0,-1\rangle + \sqrt{\frac{1}{14}}\,|2,2,1,-2\rangle$$

$$|2,2,4,0\rangle = \sqrt{\frac{1}{70}}\,|2,2,-2,2\rangle + \sqrt{\frac{8}{35}}\,|2,2,-1,1\rangle + \sqrt{\frac{18}{35}}\,|2,2,0,0\rangle + \sqrt{\frac{8}{35}}\,|2,2,1,-1\rangle + \sqrt{\frac{1}{70}}\,|2,2,2,-2\rangle$$

$$|2,2,4,1\rangle = \sqrt{\frac{1}{14}}\,|2,2,-1,2\rangle + \sqrt{\frac{3}{7}}\,|2,2,0,1\rangle + \sqrt{\frac{3}{7}}\,|2,2,1,0\rangle + \sqrt{\frac{1}{14}}\,|2,2,2,-1\rangle$$

$$|2,2,4,2\rangle = \sqrt{\frac{3}{14}}\,|2,2,0,2\rangle + \sqrt{\frac{4}{7}}\,|2,2,1,1\rangle + \sqrt{\frac{3}{14}}\,|2,2,2,0\rangle$$

$$|2,2,4,3\rangle = \sqrt{\frac{1}{2}}\,|2,2,1,2\rangle + \sqrt{\frac{1}{2}}\,|2,2,2,1\rangle$$

$$|2,2,4,4\rangle = |2,2,2,2\rangle$$

$$|2,2,0,0\rangle = \sqrt{\frac{1}{5}}\,|2,2,-2,2\rangle - \sqrt{\frac{1}{5}}\,|2,2,-1,1\rangle + \sqrt{\frac{1}{5}}\,|2,2,0,0\rangle - \sqrt{\frac{1}{5}}\,|2,2,1,-1\rangle + \sqrt{\frac{1}{5}}\,|2,2,2,-2\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},3,-3\right\rangle = \left|\frac{5}{2},\frac{1}{2},\frac{-5}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},3,-2\right\rangle = \sqrt{\frac{1}{6}}\left|\frac{5}{2},\frac{1}{2},\frac{-5}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{5}{6}}\left|\frac{5}{2},\frac{1}{2},\frac{-3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},3,-1\right\rangle = \sqrt{\frac{1}{3}}\left|\frac{5}{2},\frac{1}{2},\frac{-3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{2}{3}}\left|\frac{5}{2},\frac{1}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},3,0\right\rangle = \sqrt{\frac{1}{2}}\left|\frac{5}{2},\frac{1}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{5}{2},\frac{1}{2},\frac{1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},3,1\right\rangle = \sqrt{\frac{2}{3}}\left|\frac{5}{2},\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{3}}\left|\frac{5}{2},\frac{1}{2},\frac{3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},3,2\right\rangle = \sqrt{\frac{5}{6}}\left|\frac{5}{2},\frac{1}{2},\frac{3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{6}}\left|\frac{5}{2},\frac{1}{2},\frac{5}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},3,3\right\rangle = \left|\frac{5}{2},\frac{1}{2},\frac{5}{2},\frac{1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},2,-2\right\rangle = -\sqrt{\frac{5}{6}}\left|\frac{5}{2},\frac{1}{2},\frac{-5}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{6}}\left|\frac{5}{2},\frac{1}{2},\frac{-3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},2,-1\right\rangle = -\sqrt{\frac{2}{3}}\left|\frac{5}{2},\frac{1}{2},\frac{-3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{3}}\left|\frac{5}{2},\frac{1}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},2,0\right\rangle = -\sqrt{\frac{1}{2}}\left|\frac{5}{2},\frac{1}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{5}{2},\frac{1}{2},\frac{1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},2,1\right\rangle = -\sqrt{\frac{1}{3}}\left|\frac{5}{2},\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{2}{3}}\left|\frac{5}{2},\frac{1}{2},\frac{3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{1}{2},2,2\right\rangle = -\sqrt{\frac{1}{6}}\left|\frac{5}{2},\frac{1}{2},\frac{3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{5}{6}}\left|\frac{5}{2},\frac{1}{2},\frac{5}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},1,\frac{7}{2},\frac{-7}{2}\right\rangle = \left|\frac{5}{2},1,\frac{-5}{2},-1\right\rangle$$

$$\left|\frac{5}{2},1,\frac{7}{2},\frac{-5}{2}\right\rangle = \sqrt{\frac{2}{7}}\left|\frac{5}{2},1,\frac{-5}{2},0\right\rangle + \sqrt{\frac{5}{7}}\left|\frac{5}{2},1,\frac{-3}{2},-1\right\rangle$$

$$\left|\frac{5}{2},1,\frac{7}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{1}{21}}\left|\frac{5}{2},1,\frac{-5}{2},1\right\rangle + \sqrt{\frac{10}{21}}\left|\frac{5}{2},1,\frac{-3}{2},0\right\rangle + \sqrt{\frac{10}{21}}\left|\frac{5}{2},1,\frac{-1}{2},-1\right\rangle$$

$$\left|\frac{5}{2},1,\frac{7}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{1}{7}}\left|\frac{5}{2},1,\frac{-3}{2},1\right\rangle + \sqrt{\frac{4}{7}}\left|\frac{5}{2},1,\frac{-1}{2},0\right\rangle + \sqrt{\frac{2}{7}}\left|\frac{5}{2},1,\frac{1}{2},-1\right\rangle$$

$$\left|\frac{5}{2},1,\frac{7}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{2}{7}}\left|\frac{5}{2},1,\frac{-1}{2},1\right\rangle + \sqrt{\frac{4}{7}}\left|\frac{5}{2},1,\frac{1}{2},0\right\rangle + \sqrt{\frac{1}{7}}\left|\frac{5}{2},1,\frac{3}{2},-1\right\rangle$$

$$\left|\frac{5}{2},1,\frac{7}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{10}{21}}\left|\frac{5}{2},1,\frac{1}{2},1\right\rangle + \sqrt{\frac{10}{21}}\left|\frac{5}{2},1,\frac{3}{2},0\right\rangle + \sqrt{\frac{1}{21}}\left|\frac{5}{2},1,\frac{5}{2},-1\right\rangle$$

$$\left|\frac{5}{2},1,\frac{7}{2},\frac{5}{2}\right\rangle = \sqrt{\frac{5}{7}}\left|\frac{5}{2},1,\frac{3}{2},1\right\rangle + \sqrt{\frac{2}{7}}\left|\frac{5}{2},1,\frac{5}{2},0\right\rangle$$

$$\left|\frac{5}{2},1,\frac{7}{2},\frac{7}{2}\right\rangle = \left|\frac{5}{2},1,\frac{5}{2},1\right\rangle$$

$$\left|\frac{5}{2},1,\frac{3}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{2}{3}}\left|\frac{5}{2},1,\frac{-5}{2},1\right\rangle - \sqrt{\frac{4}{15}}\left|\frac{5}{2},1,\frac{-3}{2},0\right\rangle + \sqrt{\frac{1}{15}}\left|\frac{5}{2},1,\frac{-1}{2},-1\right\rangle$$

$$\left|\frac{5}{2},1,\frac{3}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{2}{5}}\left|\frac{5}{2},1,\frac{-3}{2},1\right\rangle - \sqrt{\frac{2}{5}}\left|\frac{5}{2},1,\frac{-1}{2},0\right\rangle + \sqrt{\frac{1}{5}}\left|\frac{5}{2},1,\frac{1}{2},-1\right\rangle$$

$$\left|\frac{5}{2},1,\frac{3}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{1}{5}}\left|\frac{5}{2},1,\frac{-1}{2},1\right\rangle - \sqrt{\frac{2}{5}}\left|\frac{5}{2},1,\frac{1}{2},0\right\rangle + \sqrt{\frac{2}{5}}\left|\frac{5}{2},1,\frac{3}{2},-1\right\rangle$$

$$\left|\frac{5}{2},1,\frac{3}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{1}{15}}\left|\frac{5}{2},1,\frac{1}{2},1\right\rangle - \sqrt{\frac{4}{15}}\left|\frac{5}{2},1,\frac{3}{2},0\right\rangle + \sqrt{\frac{2}{3}}\left|\frac{5}{2},1,\frac{5}{2},-1\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},4,-4\right\rangle = \left|\frac{5}{2},\frac{3}{2},\frac{-5}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},4,-3\right\rangle = \sqrt{\frac{3}{8}}\left|\frac{5}{2},\frac{3}{2},\frac{-5}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{8}}\left|\frac{5}{2},\frac{3}{2},\frac{-3}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},4,-2\right\rangle = \sqrt{\frac{3}{28}}\left|\frac{5}{2},\frac{3}{2},\frac{-5}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{15}{28}}\left|\frac{5}{2},\frac{3}{2},\frac{-3}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{14}}\left|\frac{5}{2},\frac{3}{2},\frac{-1}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},4,-1\right\rangle = \sqrt{\frac{1}{56}}\left|\frac{5}{2},\frac{3}{2},\frac{-5}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{15}{56}}\left|\frac{5}{2},\frac{3}{2},\frac{-3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{15}{28}}\left|\frac{5}{2},\frac{3}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{28}}\left|\frac{5}{2},\frac{3}{2},\frac{1}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},4,0\right\rangle = \sqrt{\frac{1}{14}}\left|\frac{5}{2},\frac{3}{2},\frac{-3}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{3}{7}}\left|\frac{5}{2},\frac{3}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{3}{7}}\left|\frac{5}{2},\frac{3}{2},\frac{1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{14}}\left|\frac{5}{2},\frac{3}{2},\frac{3}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},4,1\right\rangle = \sqrt{\frac{5}{28}}\left|\frac{5}{2},\frac{3}{2},\frac{-1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{15}{28}}\left|\frac{5}{2},\frac{3}{2},\frac{1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{15}{56}}\left|\frac{5}{2},\frac{3}{2},\frac{3}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{56}}\left|\frac{5}{2},\frac{3}{2},\frac{5}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},4,2\right\rangle = \sqrt{\frac{5}{14}}\left|\frac{5}{2},\frac{3}{2},\frac{1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{15}{28}}\left|\frac{5}{2},\frac{3}{2},\frac{3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{3}{28}}\left|\frac{5}{2},\frac{3}{2},\frac{5}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},4,3\right\rangle = \sqrt{\frac{5}{8}}\left|\frac{5}{2},\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{3}{8}}\left|\frac{5}{2},\frac{3}{2},\frac{5}{2},\frac{1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},4,4\right\rangle = \left|\frac{5}{2},\frac{3}{2},\frac{5}{2},\frac{3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},1,-1\right\rangle = -\sqrt{\frac{1}{2}}\left|\frac{5}{2},\frac{3}{2},\frac{-5}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{3}{10}}\left|\frac{5}{2},\frac{3}{2},\frac{-3}{2},\frac{1}{2}\right\rangle - \sqrt{\frac{3}{20}}\left|\frac{5}{2},\frac{3}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{20}}\left|\frac{5}{2},\frac{3}{2},\frac{1}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},1,0\right\rangle = -\sqrt{\frac{1}{5}}\left|\frac{5}{2},\frac{3}{2},\frac{-3}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{3}{10}}\left|\frac{5}{2},\frac{3}{2},\frac{-1}{2},\frac{1}{2}\right\rangle - \sqrt{\frac{3}{10}}\left|\frac{5}{2},\frac{3}{2},\frac{1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{5}}\left|\frac{5}{2},\frac{3}{2},\frac{3}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{3}{2},1,1\right\rangle = -\sqrt{\frac{1}{20}}\left|\frac{5}{2},\frac{3}{2},\frac{-1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{3}{20}}\left|\frac{5}{2},\frac{3}{2},\frac{1}{2},\frac{1}{2}\right\rangle - \sqrt{\frac{3}{10}}\left|\frac{5}{2},\frac{3}{2},\frac{3}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{5}{2},\frac{3}{2},\frac{5}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{5}{2},2,\frac{9}{2},\frac{-9}{2}\right\rangle = \left|\frac{5}{2},2,\frac{-5}{2},-2\right\rangle$$

$$\left|\frac{5}{2},2,\frac{9}{2},\frac{-7}{2}\right\rangle = \sqrt{\frac{4}{9}}\left|\frac{5}{2},2,\frac{-5}{2},-1\right\rangle + \sqrt{\frac{5}{9}}\left|\frac{5}{2},2,\frac{-3}{2},-2\right\rangle$$

$$\left|\frac{5}{2},2,\frac{9}{2},\frac{-5}{2}\right\rangle = \sqrt{\frac{1}{6}}\left|\frac{5}{2},2,\frac{-5}{2},0\right\rangle + \sqrt{\frac{5}{9}}\left|\frac{5}{2},2,\frac{-3}{2},-1\right\rangle + \sqrt{\frac{5}{18}}\left|\frac{5}{2},2,\frac{-1}{2},-2\right\rangle$$

$$\left|\frac{5}{2},2,\frac{9}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{1}{21}}\left|\frac{5}{2},2,\frac{-5}{2},1\right\rangle + \sqrt{\frac{5}{14}}\left|\frac{5}{2},2,\frac{-3}{2},0\right\rangle + \sqrt{\frac{10}{21}}\left|\frac{5}{2},2,\frac{-1}{2},-1\right\rangle + \sqrt{\frac{5}{42}}\left|\frac{5}{2},2,\frac{1}{2},-2\right\rangle$$

$$\left|\frac{5}{2},2,\frac{9}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{1}{126}}\left|\frac{5}{2},2,\frac{-5}{2},2\right\rangle + \sqrt{\frac{10}{63}}\left|\frac{5}{2},2,\frac{-3}{2},1\right\rangle + \sqrt{\frac{10}{21}}\left|\frac{5}{2},2,\frac{-1}{2},0\right\rangle + \sqrt{\frac{20}{63}}\left|\frac{5}{2},2,\frac{1}{2},-1\right\rangle + \sqrt{\frac{5}{126}}\left|\frac{5}{2},2,\frac{3}{2},-2\right\rangle$$

$$\left|\frac{5}{2},2,\frac{9}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{5}{126}}\left|\frac{5}{2},2,\frac{-3}{2},2\right\rangle + \sqrt{\frac{20}{63}}\left|\frac{5}{2},2,\frac{-1}{2},1\right\rangle + \sqrt{\frac{10}{21}}\left|\frac{5}{2},2,\frac{1}{2},0\right\rangle + \sqrt{\frac{10}{63}}\left|\frac{5}{2},2,\frac{3}{2},-1\right\rangle + \sqrt{\frac{1}{126}}\left|\frac{5}{2},2,\frac{5}{2},-2\right\rangle$$

$$\left|\frac{5}{2},2,\frac{9}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{5}{42}}\left|\frac{5}{2},2,\frac{-1}{2},2\right\rangle + \sqrt{\frac{10}{21}}\left|\frac{5}{2},2,\frac{1}{2},1\right\rangle + \sqrt{\frac{5}{14}}\left|\frac{5}{2},2,\frac{3}{2},0\right\rangle + \sqrt{\frac{1}{21}}\left|\frac{5}{2},2,\frac{5}{2},-1\right\rangle$$

$$\left|\frac{5}{2},2,\frac{9}{2},\frac{5}{2}\right\rangle = \sqrt{\frac{5}{18}}\left|\frac{5}{2},2,\frac{1}{2},2\right\rangle + \sqrt{\frac{5}{9}}\left|\frac{5}{2},2,\frac{3}{2},1\right\rangle + \sqrt{\frac{1}{6}}\left|\frac{5}{2},2,\frac{5}{2},0\right\rangle$$

$$\left|\frac{5}{2},2,\frac{9}{2},\frac{7}{2}\right\rangle = \sqrt{\frac{5}{9}}\left|\frac{5}{2},2,\frac{3}{2},2\right\rangle + \sqrt{\frac{4}{9}}\left|\frac{5}{2},2,\frac{5}{2},1\right\rangle$$

$$\left|\frac{5}{2},2,\frac{9}{2},\frac{9}{2}\right\rangle = \left|\frac{5}{2},2,\frac{5}{2},2\right\rangle$$

$$\left|\frac{5}{2},2,\frac{1}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{1}{3}}\left|\frac{5}{2},2,\frac{-5}{2},2\right\rangle - \sqrt{\frac{4}{15}}\left|\frac{5}{2},2,\frac{-3}{2},1\right\rangle + \sqrt{\frac{1}{5}}\left|\frac{5}{2},2,\frac{-1}{2},0\right\rangle - \sqrt{\frac{2}{15}}\left|\frac{5}{2},2,\frac{1}{2},-1\right\rangle + \sqrt{\frac{1}{15}}\left|\frac{5}{2},2,\frac{3}{2},-2\right\rangle$$

$$\left|\frac{5}{2},2,\frac{1}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{1}{15}}\left|\frac{5}{2},2,\frac{-3}{2},2\right\rangle - \sqrt{\frac{2}{15}}\left|\frac{5}{2},2,\frac{-1}{2},1\right\rangle + \sqrt{\frac{1}{5}}\left|\frac{5}{2},2,\frac{1}{2},0\right\rangle - \sqrt{\frac{4}{15}}\left|\frac{5}{2},2,\frac{3}{2},-1\right\rangle + \sqrt{\frac{1}{3}}\left|\frac{5}{2},2,\frac{5}{2},-2\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,-5\right\rangle = \left|\frac{5}{2},\frac{5}{2},\frac{-5}{2},\frac{-5}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,-4\right\rangle = \sqrt{\frac{1}{2}}\left|\frac{5}{2},\frac{5}{2},\frac{-5}{2},\frac{-3}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{5}{2},\frac{5}{2},\frac{-3}{2},\frac{-5}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,-3\right\rangle = \sqrt{\frac{2}{9}}\left|\frac{5}{2},\frac{5}{2},\frac{-5}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{9}}\left|\frac{5}{2},\frac{5}{2},\frac{-3}{2},\frac{-3}{2}\right\rangle + \sqrt{\frac{2}{9}}\left|\frac{5}{2},\frac{5}{2},\frac{-1}{2},\frac{-5}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,-2\right\rangle = \sqrt{\frac{1}{12}}\left|\frac{5}{2},\frac{5}{2},\frac{-5}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{5}{12}}\left|\frac{5}{2},\frac{5}{2},\frac{-3}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{12}}\left|\frac{5}{2},\frac{5}{2},\frac{-1}{2},\frac{-3}{2}\right\rangle + \sqrt{\frac{1}{12}}\left|\frac{5}{2},\frac{5}{2},\frac{1}{2},\frac{-5}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,-1\right\rangle = \sqrt{\frac{1}{42}}\left|\frac{5}{2},\frac{5}{2},\frac{-5}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{5}{21}}\left|\frac{5}{2},\frac{5}{2},\frac{-3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{10}{21}}\left|\frac{5}{2},\frac{5}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{21}}\left|\frac{5}{2},\frac{5}{2},\frac{1}{2},\frac{-3}{2}\right\rangle + \sqrt{\frac{1}{42}}\left|\frac{5}{2},\frac{5}{2},\frac{3}{2},\frac{-5}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,0\right\rangle = \sqrt{\frac{1}{252}}\left|\frac{5}{2},\frac{5}{2},\frac{-5}{2},\frac{5}{2}\right\rangle + \sqrt{\frac{25}{252}}\left|\frac{5}{2},\frac{5}{2},\frac{-3}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{25}{63}}\left|\frac{5}{2},\frac{5}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{25}{63}}\left|\frac{5}{2},\frac{5}{2},\frac{1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{25}{252}}\left|\frac{5}{2},\frac{5}{2},\frac{3}{2},\frac{-3}{2}\right\rangle + \sqrt{\frac{1}{252}}\left|\frac{5}{2},\frac{5}{2},\frac{5}{2},\frac{-5}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,1\right\rangle = \sqrt{\frac{1}{42}}\left|\frac{5}{2},\frac{5}{2},\frac{-3}{2},\frac{5}{2}\right\rangle + \sqrt{\frac{5}{21}}\left|\frac{5}{2},\frac{5}{2},\frac{-1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{10}{21}}\left|\frac{5}{2},\frac{5}{2},\frac{1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{5}{21}}\left|\frac{5}{2},\frac{5}{2},\frac{3}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{42}}\left|\frac{5}{2},\frac{5}{2},\frac{5}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,2\right\rangle = \sqrt{\frac{1}{12}}\left|\frac{5}{2},\frac{5}{2},\frac{-1}{2},\frac{5}{2}\right\rangle + \sqrt{\frac{5}{12}}\left|\frac{5}{2},\frac{5}{2},\frac{1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{5}{12}}\left|\frac{5}{2},\frac{5}{2},\frac{3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{12}}\left|\frac{5}{2},\frac{5}{2},\frac{5}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,3\right\rangle = \sqrt{\frac{2}{9}}\left|\frac{5}{2},\frac{5}{2},\frac{1}{2},\frac{5}{2}\right\rangle + \sqrt{\frac{5}{9}}\left|\frac{5}{2},\frac{5}{2},\frac{3}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{2}{9}}\left|\frac{5}{2},\frac{5}{2},\frac{5}{2},\frac{1}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,4\right\rangle = \sqrt{\frac{1}{2}}\left|\frac{5}{2},\frac{5}{2},\frac{3}{2},\frac{5}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{5}{2},\frac{5}{2},\frac{5}{2},\frac{3}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},5,5\right\rangle = \left|\frac{5}{2},\frac{5}{2},\frac{5}{2},\frac{5}{2}\right\rangle$$

$$\left|\frac{5}{2},\frac{5}{2},0,0\right\rangle = -\sqrt{\frac{1}{6}}\left|\frac{5}{2},\frac{5}{2},\frac{-5}{2},\frac{5}{2}\right\rangle + \sqrt{\frac{1}{6}}\left|\frac{5}{2},\frac{5}{2},\frac{-3}{2},\frac{3}{2}\right\rangle - \sqrt{\frac{1}{6}}\left|\frac{5}{2},\frac{5}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{6}}\left|\frac{5}{2},\frac{5}{2},\frac{1}{2},\frac{-1}{2}\right\rangle - \sqrt{\frac{1}{6}}\left|\frac{5}{2},\frac{5}{2},\frac{3}{2},\frac{-3}{2}\right\rangle + \sqrt{\frac{1}{6}}\left|\frac{5}{2},\frac{5}{2},\frac{5}{2},\frac{-5}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{7}{2},\frac{-7}{2}\right\rangle = \left|3,\frac{1}{2},-3,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{7}{2},\frac{-5}{2}\right\rangle = \sqrt{\frac{1}{7}}\left|3,\frac{1}{2},-3,\frac{1}{2}\right\rangle + \sqrt{\frac{6}{7}}\left|3,\frac{1}{2},-2,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{7}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{2}{7}}\left|3,\frac{1}{2},-2,\frac{1}{2}\right\rangle + \sqrt{\frac{5}{7}}\left|3,\frac{1}{2},-1,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{7}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{3}{7}}\left|3,\frac{1}{2},-1,\frac{1}{2}\right\rangle + \sqrt{\frac{4}{7}}\left|3,\frac{1}{2},0,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{7}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{4}{7}}\left|3,\frac{1}{2},0,\frac{1}{2}\right\rangle + \sqrt{\frac{3}{7}}\left|3,\frac{1}{2},1,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{7}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{5}{7}}\left|3,\frac{1}{2},1,\frac{1}{2}\right\rangle + \sqrt{\frac{2}{7}}\left|3,\frac{1}{2},2,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{7}{2},\frac{5}{2}\right\rangle = \sqrt{\frac{6}{7}}\left|3,\frac{1}{2},2,\frac{1}{2}\right\rangle + \sqrt{\frac{1}{7}}\left|3,\frac{1}{2},3,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{7}{2},\frac{7}{2}\right\rangle = \left|3,\frac{1}{2},3,\frac{1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{5}{2},\frac{-5}{2}\right\rangle = -\sqrt{\frac{6}{7}}\left|3,\frac{1}{2},-3,\frac{1}{2}\right\rangle + \sqrt{\frac{1}{7}}\left|3,\frac{1}{2},-2,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{5}{2},\frac{-3}{2}\right\rangle = -\sqrt{\frac{5}{7}}\left|3,\frac{1}{2},-2,\frac{1}{2}\right\rangle + \sqrt{\frac{2}{7}}\left|3,\frac{1}{2},-1,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{5}{2},\frac{-1}{2}\right\rangle = -\sqrt{\frac{4}{7}}\left|3,\frac{1}{2},-1,\frac{1}{2}\right\rangle + \sqrt{\frac{3}{7}}\left|3,\frac{1}{2},0,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{5}{2},\frac{1}{2}\right\rangle = -\sqrt{\frac{3}{7}}\left|3,\frac{1}{2},0,\frac{1}{2}\right\rangle + \sqrt{\frac{4}{7}}\left|3,\frac{1}{2},1,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{5}{2},\frac{3}{2}\right\rangle = -\sqrt{\frac{2}{7}}\left|3,\frac{1}{2},1,\frac{1}{2}\right\rangle + \sqrt{\frac{5}{7}}\left|3,\frac{1}{2},2,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{1}{2},\frac{5}{2},\frac{5}{2}\right\rangle = -\sqrt{\frac{1}{7}}\left|3,\frac{1}{2},2,\frac{1}{2}\right\rangle + \sqrt{\frac{6}{7}}\left|3,\frac{1}{2},3,\frac{-1}{2}\right\rangle$$

$$|3,1,4,-4\rangle = |3,1,-3,-1\rangle$$

$$|3,1,4,-3\rangle = \sqrt{\frac{1}{4}}\,|3,1,-3,0\rangle + \sqrt{\frac{3}{4}}\,|3,1,-2,-1\rangle$$

$$|3,1,4,-2\rangle = \sqrt{\frac{1}{28}}\,|3,1,-3,1\rangle + \sqrt{\frac{3}{7}}\,|3,1,-2,0\rangle + \sqrt{\frac{15}{28}}\,|3,1,-1,-1\rangle$$

$$|3,1,4,-1\rangle = \sqrt{\frac{3}{28}}\,|3,1,-2,1\rangle + \sqrt{\frac{15}{28}}\,|3,1,-1,0\rangle + \sqrt{\frac{5}{14}}\,|3,1,0,-1\rangle$$

$$|3,1,4,0\rangle = \sqrt{\frac{3}{14}}\,|3,1,-1,1\rangle + \sqrt{\frac{4}{7}}\,|3,1,0,0\rangle + \sqrt{\frac{3}{14}}\,|3,1,1,-1\rangle$$

$$|3,1,4,1\rangle = \sqrt{\frac{5}{14}}\,|3,1,0,1\rangle + \sqrt{\frac{15}{28}}\,|3,1,1,0\rangle + \sqrt{\frac{3}{28}}\,|3,1,2,-1\rangle$$

$$|3,1,4,2\rangle = \sqrt{\frac{15}{28}}\,|3,1,1,1\rangle + \sqrt{\frac{3}{7}}\,|3,1,2,0\rangle + \sqrt{\frac{1}{28}}\,|3,1,3,-1\rangle$$

$$|3,1,4,3\rangle = \sqrt{\frac{3}{4}}\,|3,1,2,1\rangle + \sqrt{\frac{1}{4}}\,|3,1,3,0\rangle$$

$$|3,1,4,4\rangle = |3,1,3,1\rangle$$

$$|3,1,2,-2\rangle = \sqrt{\frac{5}{7}}\,|3,1,-3,1\rangle - \sqrt{\frac{5}{21}}\,|3,1,-2,0\rangle + \sqrt{\frac{1}{21}}\,|3,1,-1,-1\rangle$$

$$|3,1,2,-1\rangle = \sqrt{\frac{10}{21}}\,|3,1,-2,1\rangle - \sqrt{\frac{8}{21}}\,|3,1,-1,0\rangle + \sqrt{\frac{1}{7}}\,|3,1,0,-1\rangle$$

$$|3,1,2,0\rangle = \sqrt{\frac{2}{7}}\,|3,1,-1,1\rangle - \sqrt{\frac{3}{7}}\,|3,1,0,0\rangle + \sqrt{\frac{2}{7}}\,|3,1,1,-1\rangle$$

$$|3,1,2,1\rangle = \sqrt{\frac{1}{7}}\,|3,1,0,1\rangle - \sqrt{\frac{8}{21}}\,|3,1,1,0\rangle + \sqrt{\frac{10}{21}}\,|3,1,2,-1\rangle$$

$$|3,1,2,2\rangle = \sqrt{\frac{1}{21}}\,|3,1,1,1\rangle - \sqrt{\frac{5}{21}}\,|3,1,2,0\rangle + \sqrt{\frac{5}{7}}\,|3,1,3,-1\rangle$$

$$\left|3,\frac{3}{2},\frac{9}{2},\frac{-9}{2}\right\rangle = \left|3,\frac{3}{2},-3,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{9}{2},\frac{-7}{2}\right\rangle = \sqrt{\frac{1}{3}}\left|3,\frac{3}{2},-3,\frac{-1}{2}\right\rangle + \sqrt{\frac{2}{3}}\left|3,\frac{3}{2},-2,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{9}{2},\frac{-5}{2}\right\rangle = \sqrt{\frac{1}{12}}\left|3,\frac{3}{2},-3,\frac{1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|3,\frac{3}{2},-2,\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{12}}\left|3,\frac{3}{2},-1,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{9}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{1}{84}}\left|3,\frac{3}{2},-3,\frac{3}{2}\right\rangle + \sqrt{\frac{3}{14}}\left|3,\frac{3}{2},-2,\frac{1}{2}\right\rangle + \sqrt{\frac{15}{28}}\left|3,\frac{3}{2},-1,\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{21}}\left|3,\frac{3}{2},0,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{9}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{1}{21}}\left|3,\frac{3}{2},-2,\frac{3}{2}\right\rangle + \sqrt{\frac{5}{14}}\left|3,\frac{3}{2},-1,\frac{1}{2}\right\rangle + \sqrt{\frac{10}{21}}\left|3,\frac{3}{2},0,\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{42}}\left|3,\frac{3}{2},1,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{9}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{5}{42}}\left|3,\frac{3}{2},-1,\frac{3}{2}\right\rangle + \sqrt{\frac{10}{21}}\left|3,\frac{3}{2},0,\frac{1}{2}\right\rangle + \sqrt{\frac{5}{14}}\left|3,\frac{3}{2},1,\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{21}}\left|3,\frac{3}{2},2,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{9}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{5}{21}}\left|3,\frac{3}{2},0,\frac{3}{2}\right\rangle + \sqrt{\frac{15}{28}}\left|3,\frac{3}{2},1,\frac{1}{2}\right\rangle + \sqrt{\frac{3}{14}}\left|3,\frac{3}{2},2,\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{84}}\left|3,\frac{3}{2},3,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{9}{2},\frac{5}{2}\right\rangle = \sqrt{\frac{5}{12}}\left|3,\frac{3}{2},1,\frac{3}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|3,\frac{3}{2},2,\frac{1}{2}\right\rangle + \sqrt{\frac{1}{12}}\left|3,\frac{3}{2},3,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{9}{2},\frac{7}{2}\right\rangle = \sqrt{\frac{2}{3}}\left|3,\frac{3}{2},2,\frac{3}{2}\right\rangle + \sqrt{\frac{1}{3}}\left|3,\frac{3}{2},3,\frac{1}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{9}{2},\frac{9}{2}\right\rangle = \left|3,\frac{3}{2},3,\frac{3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{3}{2},\frac{-3}{2}\right\rangle = -\sqrt{\frac{4}{7}}\left|3,\frac{3}{2},-3,\frac{3}{2}\right\rangle + \sqrt{\frac{2}{7}}\left|3,\frac{3}{2},-2,\frac{1}{2}\right\rangle - \sqrt{\frac{4}{35}}\left|3,\frac{3}{2},-1,\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{35}}\left|3,\frac{3}{2},0,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{3}{2},\frac{-1}{2}\right\rangle = -\sqrt{\frac{2}{7}}\left|3,\frac{3}{2},-2,\frac{3}{2}\right\rangle + \sqrt{\frac{12}{35}}\left|3,\frac{3}{2},-1,\frac{1}{2}\right\rangle - \sqrt{\frac{9}{35}}\left|3,\frac{3}{2},0,\frac{-1}{2}\right\rangle + \sqrt{\frac{4}{35}}\left|3,\frac{3}{2},1,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{3}{2},\frac{1}{2}\right\rangle = -\sqrt{\frac{4}{35}}\left|3,\frac{3}{2},-1,\frac{3}{2}\right\rangle + \sqrt{\frac{9}{35}}\left|3,\frac{3}{2},0,\frac{1}{2}\right\rangle - \sqrt{\frac{12}{35}}\left|3,\frac{3}{2},1,\frac{-1}{2}\right\rangle + \sqrt{\frac{2}{7}}\left|3,\frac{3}{2},2,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\rangle = -\sqrt{\frac{1}{35}}\left|3,\frac{3}{2},0,\frac{3}{2}\right\rangle + \sqrt{\frac{4}{35}}\left|3,\frac{3}{2},1,\frac{1}{2}\right\rangle - \sqrt{\frac{2}{7}}\left|3,\frac{3}{2},2,\frac{-1}{2}\right\rangle + \sqrt{\frac{4}{7}}\left|3,\frac{3}{2},3,\frac{-3}{2}\right\rangle$$

$$|3,2,5,-5\rangle = |3,2,-3,-2\rangle$$

$$|3,2,5,-4\rangle = \sqrt{\frac{2}{5}}\,|3,2,-3,-1\rangle + \sqrt{\frac{3}{5}}\,|3,2,-2,-2\rangle$$

$$|3,2,5,-3\rangle = \sqrt{\frac{2}{15}}\,|3,2,-3,0\rangle + \sqrt{\frac{8}{15}}\,|3,2,-2,-1\rangle + \sqrt{\frac{1}{3}}\,|3,2,-1,-2\rangle$$

$$|3,2,5,-2\rangle = \sqrt{\frac{1}{30}}\,|3,2,-3,1\rangle + \sqrt{\frac{3}{10}}\,|3,2,-2,0\rangle + \sqrt{\frac{1}{2}}\,|3,2,-1,-1\rangle + \sqrt{\frac{1}{6}}\,|3,2,0,-2\rangle$$

$$|3,2,5,-1\rangle = \sqrt{\frac{1}{210}}\,|3,2,-3,2\rangle + \sqrt{\frac{4}{35}}\,|3,2,-2,1\rangle + \sqrt{\frac{3}{7}}\,|3,2,-1,0\rangle + \sqrt{\frac{8}{21}}\,|3,2,0,-1\rangle + \sqrt{\frac{1}{14}}\,|3,2,1,-2\rangle$$

$$|3,2,5,0\rangle = \sqrt{\frac{1}{42}}\,|3,2,-2,2\rangle + \sqrt{\frac{5}{21}}\,|3,2,-1,1\rangle + \sqrt{\frac{10}{21}}\,|3,2,0,0\rangle + \sqrt{\frac{5}{21}}\,|3,2,1,-1\rangle + \sqrt{\frac{1}{42}}\,|3,2,2,-2\rangle$$

$$|3,2,5,1\rangle = \sqrt{\frac{1}{14}}\,|3,2,-1,2\rangle + \sqrt{\frac{8}{21}}\,|3,2,0,1\rangle + \sqrt{\frac{3}{7}}\,|3,2,1,0\rangle + \sqrt{\frac{4}{35}}\,|3,2,2,-1\rangle + \sqrt{\frac{1}{210}}\,|3,2,3,-2\rangle$$

$$|3,2,5,2\rangle = \sqrt{\frac{1}{6}}\,|3,2,0,2\rangle + \sqrt{\frac{1}{2}}\,|3,2,1,1\rangle + \sqrt{\frac{3}{10}}\,|3,2,2,0\rangle + \sqrt{\frac{1}{30}}\,|3,2,3,-1\rangle$$

$$|3,2,5,3\rangle = \sqrt{\frac{1}{3}}\,|3,2,1,2\rangle + \sqrt{\frac{8}{15}}\,|3,2,2,1\rangle + \sqrt{\frac{2}{15}}\,|3,2,3,0\rangle$$

$$|3,2,5,4\rangle = \sqrt{\frac{3}{5}}\,|3,2,2,2\rangle + \sqrt{\frac{2}{5}}\,|3,2,3,1\rangle$$

$$|3,2,5,5\rangle = |3,2,3,2\rangle$$

$$|3,2,1,-1\rangle = \sqrt{\frac{3}{7}}\,|3,2,-3,2\rangle - \sqrt{\frac{2}{7}}\,|3,2,-2,1\rangle + \sqrt{\frac{6}{35}}\,|3,2,-1,0\rangle - \sqrt{\frac{3}{35}}\,|3,2,0,-1\rangle + \sqrt{\frac{1}{35}}\,|3,2,1,-2\rangle$$

$$|3,2,1,0\rangle = \sqrt{\frac{1}{7}}\,|3,2,-2,2\rangle - \sqrt{\frac{8}{35}}\,|3,2,-1,1\rangle + \sqrt{\frac{9}{35}}\,|3,2,0,0\rangle - \sqrt{\frac{8}{35}}\,|3,2,1,-1\rangle + \sqrt{\frac{1}{7}}\,|3,2,2,-2\rangle$$

$$|3,2,1,1\rangle = \sqrt{\frac{1}{35}}\,|3,2,-1,2\rangle - \sqrt{\frac{3}{35}}\,|3,2,0,1\rangle + \sqrt{\frac{6}{35}}\,|3,2,1,0\rangle - \sqrt{\frac{2}{7}}\,|3,2,2,-1\rangle + \sqrt{\frac{3}{7}}\,|3,2,3,-2\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{-11}{2}\right\rangle = \left|3,\frac{5}{2},-3,\frac{-5}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{-9}{2}\right\rangle = \sqrt{\frac{5}{11}}\left|3,\frac{5}{2},-3,\frac{-3}{2}\right\rangle + \sqrt{\frac{6}{11}}\left|3,\frac{5}{2},-2,\frac{-5}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{-7}{2}\right\rangle = \sqrt{\frac{2}{11}}\left|3,\frac{5}{2},-3,\frac{-1}{2}\right\rangle + \sqrt{\frac{6}{11}}\left|3,\frac{5}{2},-2,\frac{-3}{2}\right\rangle + \sqrt{\frac{3}{11}}\left|3,\frac{5}{2},-1,\frac{-5}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{-5}{2}\right\rangle = \sqrt{\frac{2}{33}}\left|3,\frac{5}{2},-3,\frac{1}{2}\right\rangle + \sqrt{\frac{4}{11}}\left|3,\frac{5}{2},-2,\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{11}}\left|3,\frac{5}{2},-1,\frac{-3}{2}\right\rangle + \sqrt{\frac{4}{33}}\left|3,\frac{5}{2},0,\frac{-5}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{1}{66}}\left|3,\frac{5}{2},-3,\frac{3}{2}\right\rangle + \sqrt{\frac{2}{11}}\left|3,\frac{5}{2},-2,\frac{1}{2}\right\rangle + \sqrt{\frac{5}{11}}\left|3,\frac{5}{2},-1,\frac{-1}{2}\right\rangle + \sqrt{\frac{10}{33}}\left|3,\frac{5}{2},0,\frac{-3}{2}\right\rangle + \sqrt{\frac{1}{22}}\left|3,\frac{5}{2},1,\frac{-5}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{1}{462}}\left|3,\frac{5}{2},-3,\frac{5}{2}\right\rangle + \sqrt{\frac{5}{77}}\left|3,\frac{5}{2},-2,\frac{3}{2}\right\rangle + \sqrt{\frac{25}{77}}\left|3,\frac{5}{2},-1,\frac{1}{2}\right\rangle + \sqrt{\frac{100}{231}}\left|3,\frac{5}{2},0,\frac{-1}{2}\right\rangle + \sqrt{\frac{25}{154}}\left|3,\frac{5}{2},1,\frac{-3}{2}\right\rangle + \sqrt{\frac{1}{77}}\left|3,\frac{5}{2},2,\frac{-5}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{1}{77}}\left|3,\frac{5}{2},-2,\frac{5}{2}\right\rangle + \sqrt{\frac{25}{154}}\left|3,\frac{5}{2},-1,\frac{3}{2}\right\rangle + \sqrt{\frac{100}{231}}\left|3,\frac{5}{2},0,\frac{1}{2}\right\rangle + \sqrt{\frac{25}{77}}\left|3,\frac{5}{2},1,\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{77}}\left|3,\frac{5}{2},2,\frac{-3}{2}\right\rangle + \sqrt{\frac{1}{462}}\left|3,\frac{5}{2},3,\frac{-5}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{1}{22}}\left|3,\frac{5}{2},-1,\frac{5}{2}\right\rangle + \sqrt{\frac{10}{33}}\left|3,\frac{5}{2},0,\frac{3}{2}\right\rangle + \sqrt{\frac{5}{11}}\left|3,\frac{5}{2},1,\frac{1}{2}\right\rangle + \sqrt{\frac{2}{11}}\left|3,\frac{5}{2},2,\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{66}}\left|3,\frac{5}{2},3,\frac{-3}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{5}{2}\right\rangle = \sqrt{\frac{4}{33}}\left|3,\frac{5}{2},0,\frac{5}{2}\right\rangle + \sqrt{\frac{5}{11}}\left|3,\frac{5}{2},1,\frac{3}{2}\right\rangle + \sqrt{\frac{4}{11}}\left|3,\frac{5}{2},2,\frac{1}{2}\right\rangle + \sqrt{\frac{2}{33}}\left|3,\frac{5}{2},3,\frac{-1}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{7}{2}\right\rangle = \sqrt{\frac{3}{11}}\left|3,\frac{5}{2},1,\frac{5}{2}\right\rangle + \sqrt{\frac{6}{11}}\left|3,\frac{5}{2},2,\frac{3}{2}\right\rangle + \sqrt{\frac{2}{11}}\left|3,\frac{5}{2},3,\frac{1}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{9}{2}\right\rangle = \sqrt{\frac{6}{11}}\left|3,\frac{5}{2},2,\frac{5}{2}\right\rangle + \sqrt{\frac{5}{11}}\left|3,\frac{5}{2},3,\frac{3}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{11}{2},\frac{11}{2}\right\rangle = \left|3,\frac{5}{2},3,\frac{5}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{1}{2},\frac{-1}{2}\right\rangle = -\sqrt{\frac{2}{7}}\left|3,\frac{5}{2},-3,\frac{5}{2}\right\rangle + \sqrt{\frac{5}{21}}\left|3,\frac{5}{2},-2,\frac{3}{2}\right\rangle - \sqrt{\frac{4}{21}}\left|3,\frac{5}{2},-1,\frac{1}{2}\right\rangle + \sqrt{\frac{1}{7}}\left|3,\frac{5}{2},0,\frac{-1}{2}\right\rangle - \sqrt{\frac{2}{21}}\left|3,\frac{5}{2},1,\frac{-3}{2}\right\rangle + \sqrt{\frac{1}{21}}\left|3,\frac{5}{2},2,\frac{-5}{2}\right\rangle$$

$$\left|3,\frac{5}{2},\frac{1}{2},\frac{1}{2}\right\rangle = -\sqrt{\frac{1}{21}}\left|3,\frac{5}{2},-2,\frac{5}{2}\right\rangle + \sqrt{\frac{2}{21}}\left|3,\frac{5}{2},-1,\frac{3}{2}\right\rangle - \sqrt{\frac{1}{7}}\left|3,\frac{5}{2},0,\frac{1}{2}\right\rangle + \sqrt{\frac{4}{21}}\left|3,\frac{5}{2},1,\frac{-1}{2}\right\rangle - \sqrt{\frac{5}{21}}\left|3,\frac{5}{2},2,\frac{-3}{2}\right\rangle + \sqrt{\frac{2}{7}}\left|3,\frac{5}{2},3,\frac{-5}{2}\right\rangle$$

$$|3,3,6,-6\rangle = |3,3,-3,-3\rangle$$

$$|3,3,6,-5\rangle = \sqrt{\frac{1}{2}}\,|3,3,-3,-2\rangle + \sqrt{\frac{1}{2}}\,|3,3,-2,-3\rangle$$

$$|3,3,6,-4\rangle = \sqrt{\frac{5}{22}}\,|3,3,-3,-1\rangle + \sqrt{\frac{6}{11}}\,|3,3,-2,-2\rangle + \sqrt{\frac{5}{22}}\,|3,3,-1,-3\rangle$$

$$|3,3,6,-3\rangle = \sqrt{\frac{1}{11}}\,|3,3,-3,0\rangle + \sqrt{\frac{9}{22}}\,|3,3,-2,-1\rangle + \sqrt{\frac{9}{22}}\,|3,3,-1,-2\rangle + \sqrt{\frac{1}{11}}\,|3,3,0,-3\rangle$$

$$|3,3,6,-2\rangle = \sqrt{\frac{1}{33}}\,|3,3,-3,1\rangle + \sqrt{\frac{8}{33}}\,|3,3,-2,0\rangle + \sqrt{\frac{5}{11}}\,|3,3,-1,-1\rangle + \sqrt{\frac{8}{33}}\,|3,3,0,-2\rangle + \sqrt{\frac{1}{33}}\,|3,3,1,-3\rangle$$

$$|3,3,6,-1\rangle = \sqrt{\frac{1}{132}}\,|3,3,-3,2\rangle + \sqrt{\frac{5}{44}}\,|3,3,-2,1\rangle + \sqrt{\frac{25}{66}}\,|3,3,-1,0\rangle + \sqrt{\frac{25}{66}}\,|3,3,0,-1\rangle + \sqrt{\frac{5}{44}}\,|3,3,1,-2\rangle + \sqrt{\frac{1}{132}}\,|3,3,2,-3\rangle$$

$$|3,3,6,0\rangle = \sqrt{\frac{1}{924}}\,|3,3,-3,3\rangle + \sqrt{\frac{3}{77}}\,|3,3,-2,2\rangle + \sqrt{\frac{75}{308}}\,|3,3,-1,1\rangle + \sqrt{\frac{100}{231}}\,|3,3,0,0\rangle + \sqrt{\frac{75}{308}}\,|3,3,1,-1\rangle + \sqrt{\frac{3}{77}}\,|3,3,2,-2\rangle + \sqrt{\frac{1}{924}}\,|3,3,3,-3\rangle$$

$$|3,3,6,1\rangle = \sqrt{\frac{1}{132}}\,|3,3,-2,3\rangle + \sqrt{\frac{5}{44}}\,|3,3,-1,2\rangle + \sqrt{\frac{25}{66}}\,|3,3,0,1\rangle + \sqrt{\frac{25}{66}}\,|3,3,1,0\rangle + \sqrt{\frac{5}{44}}\,|3,3,2,-1\rangle + \sqrt{\frac{1}{132}}\,|3,3,3,-2\rangle$$

$$|3,3,6,2\rangle = \sqrt{\frac{1}{33}}\,|3,3,-1,3\rangle + \sqrt{\frac{8}{33}}\,|3,3,0,2\rangle + \sqrt{\frac{5}{11}}\,|3,3,1,1\rangle + \sqrt{\frac{8}{33}}\,|3,3,2,0\rangle + \sqrt{\frac{1}{33}}\,|3,3,3,-1\rangle$$

$$|3,3,6,3\rangle = \sqrt{\frac{1}{11}}\,|3,3,0,3\rangle + \sqrt{\frac{9}{22}}\,|3,3,1,2\rangle + \sqrt{\frac{9}{22}}\,|3,3,2,1\rangle + \sqrt{\frac{1}{11}}\,|3,3,3,0\rangle$$

$$|3,3,6,4\rangle = \sqrt{\frac{5}{22}}\,|3,3,1,3\rangle + \sqrt{\frac{6}{11}}\,|3,3,2,2\rangle + \sqrt{\frac{5}{22}}\,|3,3,3,1\rangle$$

$$|3,3,6,5\rangle = \sqrt{\frac{1}{2}}\,|3,3,2,3\rangle + \sqrt{\frac{1}{2}}\,|3,3,3,2\rangle$$

$$|3,3,6,6\rangle = |3,3,3,3\rangle$$

$$|3,3,0,0\rangle = \sqrt{\frac{1}{7}}\,|3,3,-3,3\rangle - \sqrt{\frac{1}{7}}\,|3,3,-2,2\rangle + \sqrt{\frac{1}{7}}\,|3,3,-1,1\rangle - \sqrt{\frac{1}{7}}\,|3,3,0,0\rangle + \sqrt{\frac{1}{7}}\,|3,3,1,-1\rangle - \sqrt{\frac{1}{7}}\,|3,3,2,-2\rangle + \sqrt{\frac{1}{7}}\,|3,3,3,-3\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},4,-4\right\rangle = \left|\frac{7}{2},\frac{1}{2},\frac{-7}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},4,-3\right\rangle = \sqrt{\frac{1}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{-7}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{7}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{-5}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},4,-2\right\rangle = \sqrt{\frac{1}{4}}\left|\frac{7}{2},\frac{1}{2},\frac{-5}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{3}{4}}\left|\frac{7}{2},\frac{1}{2},\frac{-3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},4,-1\right\rangle = \sqrt{\frac{3}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{-3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{5}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},4,0\right\rangle = \sqrt{\frac{1}{2}}\left|\frac{7}{2},\frac{1}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{7}{2},\frac{1}{2},\frac{1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},4,1\right\rangle = \sqrt{\frac{5}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{3}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},4,2\right\rangle = \sqrt{\frac{3}{4}}\left|\frac{7}{2},\frac{1}{2},\frac{3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{4}}\left|\frac{7}{2},\frac{1}{2},\frac{5}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},4,3\right\rangle = \sqrt{\frac{7}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{5}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{7}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},4,4\right\rangle = \left|\frac{7}{2},\frac{1}{2},\frac{7}{2},\frac{1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},3,-3\right\rangle = -\sqrt{\frac{7}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{-7}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{-5}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},3,-2\right\rangle = -\sqrt{\frac{3}{4}}\left|\frac{7}{2},\frac{1}{2},\frac{-5}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{4}}\left|\frac{7}{2},\frac{1}{2},\frac{-3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},3,-1\right\rangle = -\sqrt{\frac{5}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{-3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{3}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},3,0\right\rangle = -\sqrt{\frac{1}{2}}\left|\frac{7}{2},\frac{1}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{7}{2},\frac{1}{2},\frac{1}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},3,1\right\rangle = -\sqrt{\frac{3}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{5}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{3}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},3,2\right\rangle = -\sqrt{\frac{1}{4}}\left|\frac{7}{2},\frac{1}{2},\frac{3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{3}{4}}\left|\frac{7}{2},\frac{1}{2},\frac{5}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{1}{2},3,3\right\rangle = -\sqrt{\frac{1}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{5}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{7}{8}}\left|\frac{7}{2},\frac{1}{2},\frac{7}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},1,\frac{9}{2},\frac{-9}{2}\right\rangle = \left|\frac{7}{2},1,\frac{-7}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{9}{2},\frac{-7}{2}\right\rangle = \sqrt{\frac{2}{9}}\left|\frac{7}{2},1,\frac{-7}{2},0\right\rangle + \sqrt{\frac{7}{9}}\left|\frac{7}{2},1,\frac{-5}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{9}{2},\frac{-5}{2}\right\rangle = \sqrt{\frac{1}{36}}\left|\frac{7}{2},1,\frac{-7}{2},1\right\rangle + \sqrt{\frac{7}{18}}\left|\frac{7}{2},1,\frac{-5}{2},0\right\rangle + \sqrt{\frac{7}{12}}\left|\frac{7}{2},1,\frac{-3}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{9}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{1}{12}}\left|\frac{7}{2},1,\frac{-5}{2},1\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{7}{2},1,\frac{-3}{2},0\right\rangle + \sqrt{\frac{5}{12}}\left|\frac{7}{2},1,\frac{-1}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{9}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{1}{6}}\left|\frac{7}{2},1,\frac{-3}{2},1\right\rangle + \sqrt{\frac{5}{9}}\left|\frac{7}{2},1,\frac{-1}{2},0\right\rangle + \sqrt{\frac{5}{18}}\left|\frac{7}{2},1,\frac{1}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{9}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{5}{18}}\left|\frac{7}{2},1,\frac{-1}{2},1\right\rangle + \sqrt{\frac{5}{9}}\left|\frac{7}{2},1,\frac{1}{2},0\right\rangle + \sqrt{\frac{1}{6}}\left|\frac{7}{2},1,\frac{3}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{9}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{5}{12}}\left|\frac{7}{2},1,\frac{1}{2},1\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{7}{2},1,\frac{3}{2},0\right\rangle + \sqrt{\frac{1}{12}}\left|\frac{7}{2},1,\frac{5}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{9}{2},\frac{5}{2}\right\rangle = \sqrt{\frac{7}{12}}\left|\frac{7}{2},1,\frac{3}{2},1\right\rangle + \sqrt{\frac{7}{18}}\left|\frac{7}{2},1,\frac{5}{2},0\right\rangle + \sqrt{\frac{1}{36}}\left|\frac{7}{2},1,\frac{7}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{9}{2},\frac{7}{2}\right\rangle = \sqrt{\frac{7}{9}}\left|\frac{7}{2},1,\frac{5}{2},1\right\rangle + \sqrt{\frac{2}{9}}\left|\frac{7}{2},1,\frac{7}{2},0\right\rangle$$

$$\left|\frac{7}{2},1,\frac{9}{2},\frac{9}{2}\right\rangle = \left|\frac{7}{2},1,\frac{7}{2},1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{5}{2},\frac{-5}{2}\right\rangle = \sqrt{\frac{3}{4}}\left|\frac{7}{2},1,\frac{-7}{2},1\right\rangle - \sqrt{\frac{3}{14}}\left|\frac{7}{2},1,\frac{-5}{2},0\right\rangle + \sqrt{\frac{1}{28}}\left|\frac{7}{2},1,\frac{-3}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{5}{2},\frac{-3}{2}\right\rangle = \sqrt{\frac{15}{28}}\left|\frac{7}{2},1,\frac{-5}{2},1\right\rangle - \sqrt{\frac{5}{14}}\left|\frac{7}{2},1,\frac{-3}{2},0\right\rangle + \sqrt{\frac{3}{28}}\left|\frac{7}{2},1,\frac{-1}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{5}{2},\frac{-1}{2}\right\rangle = \sqrt{\frac{5}{14}}\left|\frac{7}{2},1,\frac{-3}{2},1\right\rangle - \sqrt{\frac{3}{7}}\left|\frac{7}{2},1,\frac{-1}{2},0\right\rangle + \sqrt{\frac{3}{14}}\left|\frac{7}{2},1,\frac{1}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{5}{2},\frac{1}{2}\right\rangle = \sqrt{\frac{3}{14}}\left|\frac{7}{2},1,\frac{-1}{2},1\right\rangle - \sqrt{\frac{3}{7}}\left|\frac{7}{2},1,\frac{1}{2},0\right\rangle + \sqrt{\frac{5}{14}}\left|\frac{7}{2},1,\frac{3}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{5}{2},\frac{3}{2}\right\rangle = \sqrt{\frac{3}{28}}\left|\frac{7}{2},1,\frac{1}{2},1\right\rangle - \sqrt{\frac{5}{14}}\left|\frac{7}{2},1,\frac{3}{2},0\right\rangle + \sqrt{\frac{15}{28}}\left|\frac{7}{2},1,\frac{5}{2},-1\right\rangle$$

$$\left|\frac{7}{2},1,\frac{5}{2},\frac{5}{2}\right\rangle = \sqrt{\frac{1}{28}}\left|\frac{7}{2},1,\frac{3}{2},1\right\rangle - \sqrt{\frac{3}{14}}\left|\frac{7}{2},1,\frac{5}{2},0\right\rangle + \sqrt{\frac{3}{4}}\left|\frac{7}{2},1,\frac{7}{2},-1\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,-5\right\rangle = \left|\frac{7}{2},\frac{3}{2},\frac{-7}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,-4\right\rangle = \sqrt{\frac{3}{10}}\left|\frac{7}{2},\frac{3}{2},\frac{-7}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{7}{10}}\left|\frac{7}{2},\frac{3}{2},\frac{-5}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,-3\right\rangle = \sqrt{\frac{1}{15}}\left|\frac{7}{2},\frac{3}{2},\frac{-7}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{7}{15}}\left|\frac{7}{2},\frac{3}{2},\frac{-5}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{7}{15}}\left|\frac{7}{2},\frac{3}{2},\frac{-3}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,-2\right\rangle = \sqrt{\frac{1}{120}}\left|\frac{7}{2},\frac{3}{2},\frac{-7}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{7}{40}}\left|\frac{7}{2},\frac{3}{2},\frac{-5}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{21}{40}}\left|\frac{7}{2},\frac{3}{2},\frac{-3}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{7}{24}}\left|\frac{7}{2},\frac{3}{2},\frac{-1}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,-1\right\rangle = \sqrt{\frac{1}{30}}\left|\frac{7}{2},\frac{3}{2},\frac{-5}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{3}{10}}\left|\frac{7}{2},\frac{3}{2},\frac{-3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{7}{2},\frac{3}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{6}}\left|\frac{7}{2},\frac{3}{2},\frac{1}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,0\right\rangle = \sqrt{\frac{1}{12}}\left|\frac{7}{2},\frac{3}{2},\frac{-3}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{5}{12}}\left|\frac{7}{2},\frac{3}{2},\frac{-1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{5}{12}}\left|\frac{7}{2},\frac{3}{2},\frac{1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{12}}\left|\frac{7}{2},\frac{3}{2},\frac{3}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,1\right\rangle = \sqrt{\frac{1}{6}}\left|\frac{7}{2},\frac{3}{2},\frac{-1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{1}{2}}\left|\frac{7}{2},\frac{3}{2},\frac{1}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{3}{10}}\left|\frac{7}{2},\frac{3}{2},\frac{3}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{30}}\left|\frac{7}{2},\frac{3}{2},\frac{5}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,2\right\rangle = \sqrt{\frac{7}{24}}\left|\frac{7}{2},\frac{3}{2},\frac{1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{21}{40}}\left|\frac{7}{2},\frac{3}{2},\frac{3}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{7}{40}}\left|\frac{7}{2},\frac{3}{2},\frac{5}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{120}}\left|\frac{7}{2},\frac{3}{2},\frac{7}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,3\right\rangle = \sqrt{\frac{7}{15}}\left|\frac{7}{2},\frac{3}{2},\frac{3}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{7}{15}}\left|\frac{7}{2},\frac{3}{2},\frac{5}{2},\frac{1}{2}\right\rangle + \sqrt{\frac{1}{15}}\left|\frac{7}{2},\frac{3}{2},\frac{7}{2},\frac{-1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,4\right\rangle = \sqrt{\frac{7}{10}}\left|\frac{7}{2},\frac{3}{2},\frac{5}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{3}{10}}\left|\frac{7}{2},\frac{3}{2},\frac{7}{2},\frac{1}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},5,5\right\rangle = \left|\frac{7}{2},\frac{3}{2},\frac{7}{2},\frac{3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},2,-2\right\rangle = -\sqrt{\frac{5}{8}}\left|\frac{7}{2},\frac{3}{2},\frac{-7}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{15}{56}}\left|\frac{7}{2},\frac{3}{2},\frac{-5}{2},\frac{1}{2}\right\rangle - \sqrt{\frac{5}{56}}\left|\frac{7}{2},\frac{3}{2},\frac{-3}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{56}}\left|\frac{7}{2},\frac{3}{2},\frac{-1}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},2,-1\right\rangle = -\sqrt{\frac{5}{14}}\left|\frac{7}{2},\frac{3}{2},\frac{-5}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{5}{14}}\left|\frac{7}{2},\frac{3}{2},\frac{-3}{2},\frac{1}{2}\right\rangle - \sqrt{\frac{3}{14}}\left|\frac{7}{2},\frac{3}{2},\frac{-1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{1}{14}}\left|\frac{7}{2},\frac{3}{2},\frac{1}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},2,0\right\rangle = -\sqrt{\frac{5}{28}}\left|\frac{7}{2},\frac{3}{2},\frac{-3}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{9}{28}}\left|\frac{7}{2},\frac{3}{2},\frac{-1}{2},\frac{1}{2}\right\rangle - \sqrt{\frac{9}{28}}\left|\frac{7}{2},\frac{3}{2},\frac{1}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{28}}\left|\frac{7}{2},\frac{3}{2},\frac{3}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},2,1\right\rangle = -\sqrt{\frac{1}{14}}\left|\frac{7}{2},\frac{3}{2},\frac{-1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{3}{14}}\left|\frac{7}{2},\frac{3}{2},\frac{1}{2},\frac{1}{2}\right\rangle - \sqrt{\frac{5}{14}}\left|\frac{7}{2},\frac{3}{2},\frac{3}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{14}}\left|\frac{7}{2},\frac{3}{2},\frac{5}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},\frac{3}{2},2,2\right\rangle = -\sqrt{\frac{1}{56}}\left|\frac{7}{2},\frac{3}{2},\frac{1}{2},\frac{3}{2}\right\rangle + \sqrt{\frac{5}{56}}\left|\frac{7}{2},\frac{3}{2},\frac{3}{2},\frac{1}{2}\right\rangle - \sqrt{\frac{15}{56}}\left|\frac{7}{2},\frac{3}{2},\frac{5}{2},\frac{-1}{2}\right\rangle + \sqrt{\frac{5}{8}}\left|\frac{7}{2},\frac{3}{2},\frac{7}{2},\frac{-3}{2}\right\rangle$$

$$\left|\frac{7}{2},2,\frac{11}{2},\frac{-11}{2}\right\rangle = \left|\frac{7}{2},2,\frac{-7}{2},-2\right\rangle$$

$$\left|\frac{7}{2},2,\frac{11}{2},\frac{-9}{2}\right\rangle = \sqrt{\frac{4}{11}}\left|\frac{7}{2},2,\frac{-7}{2},-1\right\rangle + \sqrt{\frac{7}{11}}\left|\frac{7}{2},2,\frac{-5}{2},-2\right\rangle$$