$$\begin{bmatrix} 10B_{20}+60B_{40} & 0 & 0 & 0 & 12\sqrt{5}B_{44}-12\sqrt{5}iB4m4 & 0 \\ 0 & -2B_{20}-180B_{40} & 0 & 0 & 0 & 12\sqrt{5}B_{44}-12\sqrt{5}iB4m4 \\ 0 & 0 & -8B_{20}+120B_{40} & 0 & 0 & 0 \\ 0 & 0 & 0 & -8B_{20}+120B_{40} & 0 & 0 \\ 12\sqrt{5}B_{44}+12\sqrt{5}iB4m4 & 0 & 0 & 0 & -2B_{20}-180B_{40} & 0 \\ 0 & 12\sqrt{5}B_{44}+12\sqrt{5}iB4m4 & 0 & 0 & 0 & 10B_{20}+60B_{40} \end{bmatrix}$$

Subspace 1

Base: $|5/2\rangle, \, |-3/2\rangle$

$$H_1 = \begin{bmatrix} 10B_{20}+60B_{40} & 12\sqrt{5}B_{44}-12\sqrt{5}iB4m4 \\ 12\sqrt{5}B_{44}+12\sqrt{5}iB4m4 & -2B_{20}-180B_{40} \end{bmatrix}$$

$\lambda_{1,1}^{(1)} = 4B_{20} - 60B_{40} - 6\sqrt{B_{20}^2 + 40B_{20}B_{40} + 400B_{40}^2 + 20B_{44}^2 + 20B4m4^2}$

$\lambda_{1,2}^{(1)} = 4B_{20} - 60B_{40} + 6\sqrt{B_{20}^2 + 40B_{20}B_{40} + 400B_{40}^2 + 20B_{44}^2 + 20B4m4^2}$

Subspace 2

Base: $|3/2\rangle, \, |-5/2\rangle$

$$H_2 = \begin{bmatrix} -2B_{20}-180B_{40} & 12\sqrt{5}B_{44}-12\sqrt{5}iB4m4 \\ 12\sqrt{5}B_{44}+12\sqrt{5}iB4m4 & 10B_{20}+60B_{40} \end{bmatrix}$$

$\lambda_{2,1}^{(1)} = 4B_{20} - 60B_{40} - 6\sqrt{B_{20}^2 + 40B_{20}B_{40} + 400B_{40}^2 + 20B_{44}^2 + 20B4m4^2}$

$\lambda_{2,2}^{(1)} = 4B_{20} - 60B_{40} + 6\sqrt{B_{20}^2 + 40B_{20}B_{40} + 400B_{40}^2 + 20B_{44}^2 + 20B4m4^2}$

Subspace 3

Base: $|1/2\rangle$

$H_3 = \begin{bmatrix} -8B_{20}+120B_{40} \end{bmatrix}$

$\lambda_{3,1}^{(1)} = -8\left(B_{20} - 15B_{40}\right)$

Subspace 4

Base: $|-1/2\rangle$

$H_4 = \begin{bmatrix} -8B_{20}+120B_{40} \end{bmatrix}$

$\lambda_{4,1}^{(1)} = -8\left(B_{20} - 15B_{40}\right)$