

$$\begin{bmatrix}
H_{\text{diag}}^{X^1\Sigma} & 0 & 0 & \frac{1}{2}d_z(A \leftarrow X)E_0 & 0 & \frac{1}{2}d_{\pm 1}(B \leftarrow X)E_0 & 0 \\
0 & H_{\text{diag}}^{a^3\Sigma} & \frac{1}{2}d_{\pm 1}(b \leftarrow a)E_0 & 0 & \frac{1}{2}d_{\pm 1}(b \leftarrow a)E_0 & 0 & \frac{1}{2}d_z(c \leftarrow a)E_0 \\
0 & \frac{1}{2}d_{\pm 1}(b \leftarrow a)E_0 & H_{\text{diag}}^{b^3\Pi_{\pm 1}} - V_0^\Pi & \sqrt{2}\xi_1 & C_{JS} & 0 & -C_{JL} \\
\frac{1}{2}d_z(A \leftarrow X)E_0 & 0 & \sqrt{2}\xi_1 & H_{\text{diag}}^{A^1\Sigma} & 0 & \sqrt{2}C_{JL} & 0 \\
0 & \frac{1}{2}d_{\pm 1}(b \leftarrow a)E_0 & C_{JS} & 0 & H_{\text{diag}}^{b^3\Pi} & -\zeta_1 & \zeta_2 + C_{LS} \\
\frac{1}{2}d_{\pm 1}(B \leftarrow X)E_0 & 0 & 0 & \sqrt{2}C_{JL} & -\zeta_1 & H_{\text{diag}}^{B^1\Pi_{\pm 1}} & \zeta_3 \\
0 & \frac{1}{2}d_z(c \leftarrow a)E_0 & -C_{JL} & 0 & \zeta_2 + C_{LS} & \zeta_3 & H_{\text{diag}}^{c^3\Sigma}
\end{bmatrix}$$

ξ_i - spin orbit coupling elements in the $\Omega = 0$ block

ζ_i - spin orbit coupling elements in the $\Omega = 1$ block

$$C_{JL} = -\frac{[J(J+1)]^{1/2}}{2\mu R^2}L(R)$$

$$C_{JS} = -\frac{[2J(J+1)]^{1/2}}{2\mu R^2}$$

$$C_{LS} = -\sqrt{2}\frac{L(R)}{2\mu R^2}$$

symbols and $L(R)$ defined as in Skomorowski et al. 2012 <http://arxiv.org/abs/1203.4524v2>