

$$\left\{ \frac{1}{\sqrt{3!}} \left(|a \begin{smallmatrix} b \\ + \end{smallmatrix} c \rangle + |c \begin{smallmatrix} a \\ + \end{smallmatrix} b \rangle + |b \begin{smallmatrix} c \\ + \end{smallmatrix} a \rangle - |b \begin{smallmatrix} a \\ - \end{smallmatrix} c \rangle - |c \begin{smallmatrix} b \\ - \end{smallmatrix} a \rangle - |a \begin{smallmatrix} c \\ - \end{smallmatrix} b \rangle \right) \right\}$$

$$\begin{aligned} & \langle a \begin{smallmatrix} b \\ + \end{smallmatrix} c | \frac{e^2}{r_{23}} | a \begin{smallmatrix} b \\ + \end{smallmatrix} c \rangle \\ & + \langle a \begin{smallmatrix} b \\ + \end{smallmatrix} c | \frac{e^2}{r_{23}} | c \begin{smallmatrix} a \\ + \end{smallmatrix} b \rangle \\ & + \langle a \begin{smallmatrix} b \\ + \end{smallmatrix} c | \frac{e^2}{r_{23}} | b \begin{smallmatrix} c \\ + \end{smallmatrix} a \rangle \\ & - \langle a \begin{smallmatrix} b \\ + \end{smallmatrix} c | \frac{e^2}{r_{23}} | b \begin{smallmatrix} a \\ - \end{smallmatrix} c \rangle \\ & - \langle a \begin{smallmatrix} b \\ + \end{smallmatrix} c | \frac{e^2}{r_{23}} | c \begin{smallmatrix} b \\ - \end{smallmatrix} a \rangle \\ & - \langle a \begin{smallmatrix} b \\ + \end{smallmatrix} c | \frac{e^2}{r_{23}} | a \begin{smallmatrix} c \\ - \end{smallmatrix} b \rangle \end{aligned}$$

$$\begin{aligned} & \langle a | a \rangle \langle b c | \frac{e^2}{r_{23}} | b c \rangle \\ & \langle a | c \rangle \langle b c | \frac{e^2}{r_{23}} | a b \rangle \\ & \langle a | b \rangle \langle b c | \frac{e^2}{r_{23}} | c a \rangle \\ & \langle a | b \rangle \langle b c | \frac{e^2}{r_{23}} | a c \rangle \\ & \langle a | c \rangle \langle b c | \frac{e^2}{r_{23}} | b a \rangle \\ & \langle a | a \rangle \langle b c | \frac{e^2}{r_{23}} | c b \rangle \end{aligned}$$