

$$\begin{aligned}
H_{\Lambda\text{-doubling}} &= \frac{1}{2}(o + p + q)(S_+^2 + S_-^2) - \frac{1}{2}(p + 2q)(J_+ S_+ + J_- S_-) + \frac{1}{2}q(J_+^2 + J_-^2) \\
&\quad + \frac{1}{4}(o_D + p_D + q_D)\{(S_+^2 + S_-^2), (J - S)^2\} \\
&\quad - \frac{1}{4}(p_D + 2q_D)\{(J_+ S_+ + J_- S_-), (J - S)^2\} + \frac{1}{4}q_D\{(J_+^2 + J_-^2), (J - S)^2\}
\end{aligned}$$