

$$\begin{aligned}
M(S, J) = & 2m_q + m_s + (\mathbf{\kappa}_{qq})\bar{\mathbf{3}} \left[S(S+1) - \frac{3}{2} \right] \\
& + (\mathbf{\kappa}_{qs})\bar{\mathbf{3}} \left[J(J+1) - S(S+1) - \frac{3}{4} \right]
\end{aligned}$$