

Eg ①

$$H = T_1 \mathbb{1} + V$$

$$V = \begin{array}{c} X \\ A(a') \\ A(a'') \end{array} \begin{array}{c} \left[\begin{array}{cc} \Delta_0^X + F_1^X q_1 + F_3^X q_3 + \frac{1}{2} \sum_{ij} F_{ij}^X q_i q_j & \lambda q_{3a} \\ \lambda q_{3a} & \lambda q_{3b} \end{array} \right. \\ \left. \begin{array}{cc} \Delta_0^A + F_1^A q_1 + F_3^A q_3 + \frac{1}{2} \sum_{ij} F_{ij}^A q_i q_j + \frac{1}{2} \eta (q_{3a}^2 - q_{3b}^2) & \eta q_{3a} q_{3b} \\ \eta q_{3a} q_{3b} & \Delta_0^A + F_1^A q_1 + F_3^A q_3 + \frac{1}{2} \sum_{ij} F_{ij}^A q_i q_j - \frac{1}{2} \eta (q_{3a}^2 - q_{3b}^2) \end{array} \right] \\ X \end{array} \begin{array}{c} A(a') \\ A(a'') \end{array}$$

$$F_{33}^X = f_{33}^X + \frac{2\lambda^2}{(\Delta_0^A - \Delta_0^X)}$$

$$F_{33}^A = f_{3a3a}^{A(a')} - \frac{2\lambda^2}{(\Delta_0^A - \Delta_0^X)} - \eta$$

Eq (2)

~~$$\eta = \frac{f_{3a3a}^{A(a')} + f_{3b3b}^{A(a')}}{2} + \frac{2\lambda^2}{\Delta}$$~~

$$\eta = \frac{1}{2} \left[f_{3a3a}^{A(a')} - f_{3b3b}^{A(a')} - \frac{2\lambda^2}{(\Delta_0^A - \Delta_0^X)} \right]$$

Eq (3)