

# Harmonic $\rightarrow$ Morse

$$H^{(I)}(q, p) = \frac{1}{2} p^2 + \frac{1}{2} \omega^2 q^2$$

$$H^{(F)}(q, p) = \frac{1}{2} p^2 + \frac{1}{2} (J + \frac{1}{2}) (1 - e^{-\beta q})^2, \quad \beta = (J + \frac{1}{2})^{-1/2}$$

