

Potential

Damien Ernst

The system is described by the differential equation :

$$M \frac{d^2 \delta}{dt^2} = P_m - P_{m_{max}} \sin \delta \quad (1)$$

where $P_{m_{max}} = \frac{EV}{X}$.

The value of δ_0 is $\arcsin \frac{P_m}{P_{m_{max}}}$.

The value of the potential $V(\delta)$ is :

$$V(\delta) = \int_{\delta_0}^{\delta} P_{m_{max}} \sin \delta - P_m d\delta \quad (2)$$

$$= -P_m (\delta - \delta_0) + P_{m_{max}} (\cos \delta - \cos \delta_e) \quad (3)$$

The following figures represent $V(\delta)$ for different values of $\frac{P_m}{P_{m_{max}}}$:

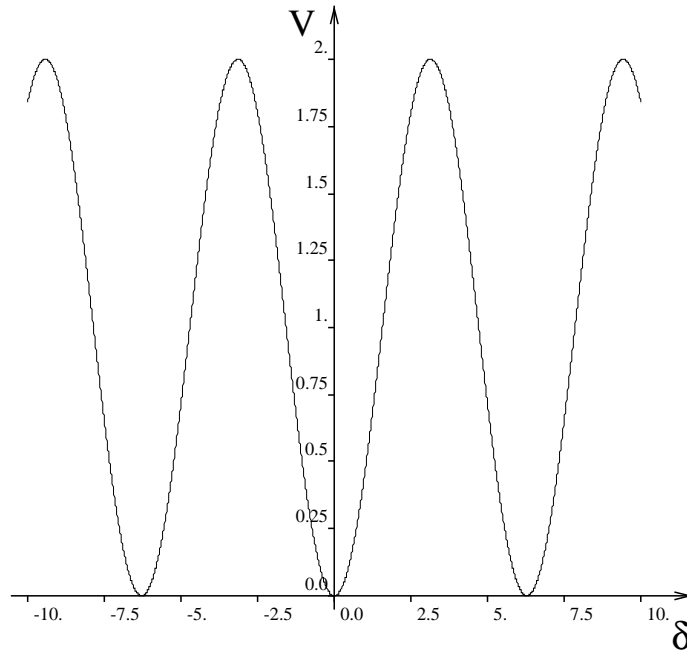


Figure 1. $\frac{P_m}{P_{m_{max}}} = 0$

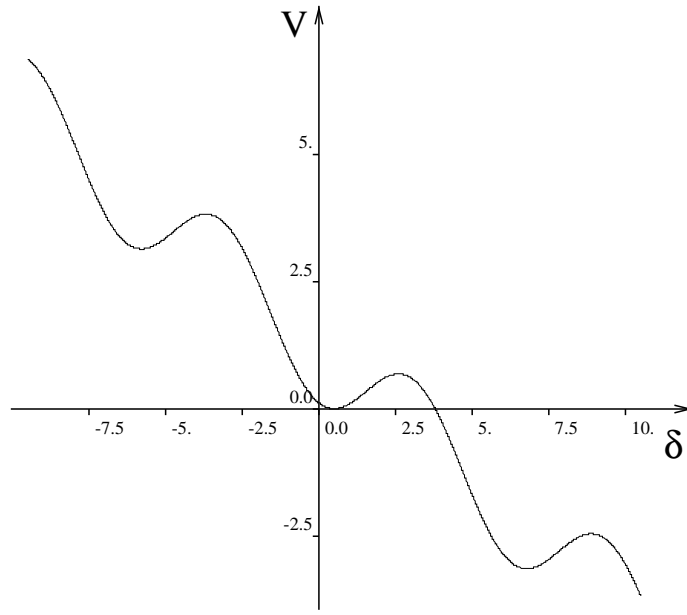


Figure 2. $\frac{P_m}{P_{max}} = 0.5$

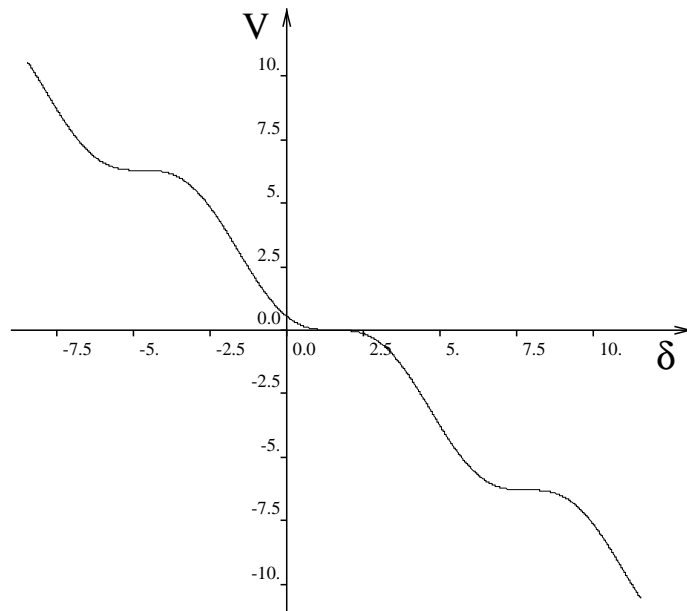


Figure 3. $\frac{P_m}{P_{max}} = 1$

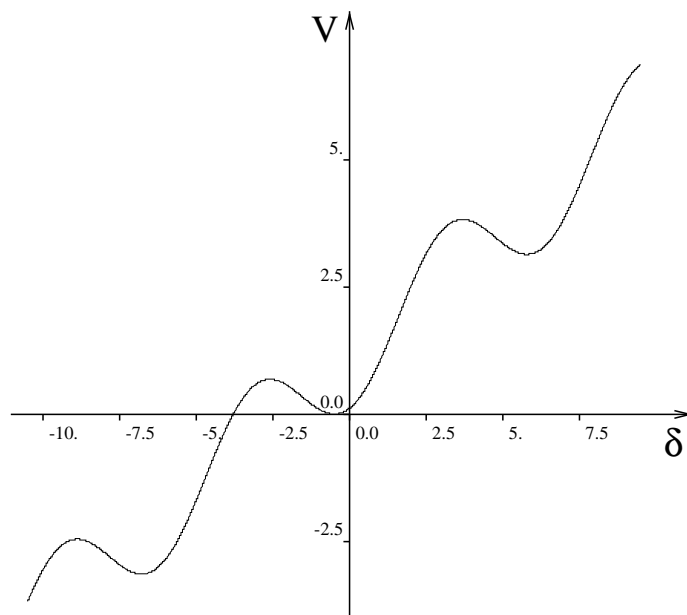


Figure 4. $\frac{P_m}{P_{max}} = -0.5$