

Some Remarks on the Dynamics of the Pendulum
with a Vertically Oscillating Support

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We will discuss stability of equilibria of the pendulum equation

$$\varphi'' + \frac{b}{m} \varphi' + \left(\frac{g}{\ell} + \frac{\psi''(t)}{\ell} \right) \sin \varphi = 0,$$

where $m, \ell \in (0, +\infty)$, $b \geq 0$, and the vertical motion of the support is given by a T -periodic function $\psi: \mathbb{R} \rightarrow \mathbb{R}$.