- For a given $\ddot{\phi}_{max}$ and $\dot{\phi}_{max}$, there is a threshold slew angle ϕ_T that determines whether the slew will have a period of coasting. The threshold slew angle is found by:

$$\phi_T = \frac{(\dot{\phi}_{max})^2}{\ddot{\phi}_{max}} \tag{1}$$

- Using the conditions, $\dot{\phi}(t_1) = \dot{\phi}_{max}$, $\dot{\phi}(t_f) = \dot{\phi}_f$, $\phi(t_f) = \phi_f$, the switching times can be determined as follows.

- If $\phi_f < \phi_T$, the switching times t_1 and final time t_f are determined thus:

$$t_f = \sqrt{\frac{4\phi_f}{\ddot{\phi}_{max}}} \tag{2}$$

$$t_1 = \frac{t_f}{2} \tag{3}$$

- If $\phi_f > \phi_T$, then the slew will have a period of coasting with constant $\dot{\phi}(t)$. The switching times t_1, t_2, and final time t_f are then calculated as:

$$t_1 = t_0 + \frac{\dot{\phi}_{max} - \dot{\phi}_0}{\ddot{\phi}_{max}}, \tag{4}$$

$$\begin{aligned} t_2 = & t_1 + \frac{1}{\dot{\phi}_{max}}\Big[\phi_f - \dot{\phi}_0(t_1 - t_0) - \frac{1}{2}\ddot{\phi}_{max}(t_1 - t_0)^2 \\ & - \frac{\dot{\phi}_{max}(\dot{\phi}_{max} - \dot{\phi}_f)}{\ddot{\phi}_{max}} + \frac{(\dot{\phi}_{max} - \dot{\phi}_f)^2}{2\ddot{\phi}_{max}}\Big], \end{aligned} \tag{5}$$

$$t_f = t_2 - \frac{\dot{\phi}_f - \dot{\phi}_{max}}{\ddot{\phi}_{max}} \tag{6}$$