define an half-sine pulse

$Amax := 1$ $\omega_f := 571.2$ $\theta := 0$ $f_f := \frac{\omega_f}{2 \cdot \pi}$ $T_f := \frac{1}{f_f}$ $tpulse := \frac{T_f}{2}$

$tpulse = 5.5 \times 10^{-3}$

Total analysis time is $tend := 200 \cdot T_f$

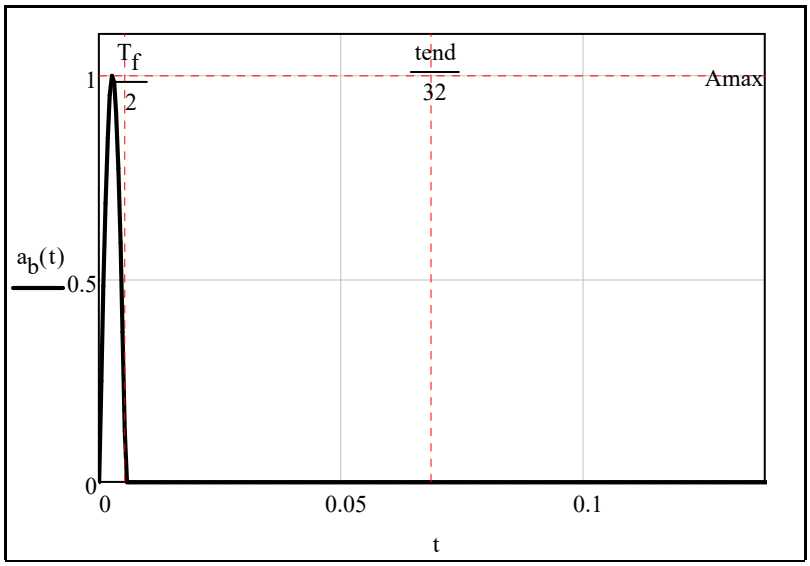
Number of time step $nsteps := 5000$

Analysis time step $\Delta t := \frac{tend}{nsteps}$

Time range $t := 0, \Delta t .. tend$

$$a_b(t) := \begin{cases} Amax \cdot \sin(\omega_f \cdot t + \theta) & \text{if } t \le tpulse \\ 0 & \text{otherwise} \end{cases}$$

$a_b(t) := Amax \cdot \sin(\omega_f \cdot t + \theta) \cdot (\Phi(t) - \Phi(t - tpulse))$



as a check set up the following integral

$$SRS_n = \left| \frac{\omega_n}{\sqrt{1-\zeta^2}} \int_0^t \ddot{u}_b(\tau) e^{-\zeta_n \omega_n (t-\tau)} \sin \omega_n \sqrt{1-\zeta^2}\,(t-\tau) d\tau \right|_{\max}$$

$i := 0, 1 .. 2000 \qquad fn_i := i \qquad \zeta := 0$

$$SRS_i := \left| \begin{array}{l} w_i \leftarrow 2 \cdot \pi \cdot fn_i \\ \max\left[ \left| \frac{w_i}{\sqrt{1-\zeta^2}} \cdot \int_0^t a_b(t) \cdot e^{-\zeta \cdot w_i \cdot (t-\tau)} \cdot \sin\left[ w_i \cdot \sqrt{\left(1-\zeta^2\right)} \cdot (t-\tau) \right] d\tau \right| \right] \end{array} \right.$$