Examples.13

Q

current i distance h.

$$G(s) = \frac{-280.14}{s^3 + 100s^2 - 9815 - 98100}$$

poles -100 31.32 -31.32 unstable

$T = 0.01$ 20 ft

$$G(z) = (1-z^{-1})\,Z\left\{\frac{G(s)}{s}\right\}$$

Solution

$$G(z) = z^{-1}\,\frac{(-3.7209\times10^{-5} - 1.1873\times10^{-4}z^{-1} - 2.2597\times10^{-4}z^{-2})}{1 - 2.4668z^{-1} + 1.7721z^{-2} - 0.3879z^{-3}}$$

$$= z^{-1}\,\frac{-3.7209\times10^{-5}(1+2.9877z^{-1})(1+0.2033z^{-1})}{(1-1.3878z^{-1})(1-0.7311z^{-1})(1-0.3679z^{-1})}$$

$$= z^{-k}\frac{B}{A}$$

$3-2=1$

$k = 1$ $\qquad A = A^g A^b$

$A^g = (1-0.7311z^{-1})(1-0.3679z^{-1})$

$A^b = (1-1.3878z^{-1})$

$B = B^g B^b$

$B^g = -3.7209 \times 10^{-5}(1+2.9877 z^{-1})$

$B^b = (1+0.2833 z^{-1})$

$A^b R_1 + z^{-k} B^b S_1 = \phi_{cl}$

$\phi_{cl}(z) = 1 - 1.8 z^{-1} + 0.819 z^{-2}$ 直接给出

$0.7 \pm j\,0.09$?

$(1 - 1.3678 z^{-1}) k_1 + z^{-1}(1 + 2.9877 z^{-1}) S_1$

$= 1 - 1.8 z^{-1} + 0.9192 z^{-2}$

$$\frac{B^b T_1}{A^b R_1 + z^{-k} B^b S_1} = \frac{Br}{\phi_{cl}}$$

$S_1 = 0.0523$ ✓

$R_1 = 1 - 0.4845 z^{-1}$ ✓

$R_c = B^g R_1 \qquad S_c = A^g S_1 \qquad T_c = A^g T_1$

$R_c = -3.7209 \times 10^{-5}(1 - 0.2812 z^{-1} - 0.0895 z^{-2})$ ✓

$S_c = 0.0523 - 0.0573 z^{-1} + 0.0147 z^{-2}$ ✓

$T_c = A^g = (1 - 0.7311 z^{-1})(1 - 0.3879 z^{-1})$ ✓