Example 4.2

Q 求 L_0 和 $\bar{x}(k+1)$

Solution $L_0 = \alpha_0(A) W_0^{-1} \begin{bmatrix} 0 \\ 1 \end{bmatrix}$

$\alpha_0(z) = (z-0.819)^2 = z^2 - 1.638z + 0.6708$ → 0.671

$\alpha_0(A) = A^2 - 1.638A + 0.6708$

$= \begin{bmatrix} 1 & 0.0952 \\ 0 & 0.905 \end{bmatrix}^2 - 1.638 \begin{bmatrix} 1 & 0.0952 \\ 0 & 0.905 \end{bmatrix} + 0.6708 I_2$ (0.671)

$= \begin{bmatrix} 0.0328 & 0.02541 \\ 0 & 0.007435 \end{bmatrix}$ (0.033, 0.0254, 0.00763 5)

△ 精度不同，不是错

$W_0 = \begin{bmatrix} C \\ CA \end{bmatrix} = \begin{bmatrix} 1 & 0 \\ 1 & 0.0952 \end{bmatrix}$ $W_0^{-1} = \begin{bmatrix} 1 & 0 \\ -10.5042 & 10.5042 \end{bmatrix}$

$L_0 = \alpha_0(A) [W_0]^{-1} = \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 0.2669 \\ 0.07810 \end{bmatrix}$

$\bar{x}(k+1) = [A - L_0 C] \bar{x}(k) + B(u(k)) + L_0 y(k)$

$= \begin{bmatrix} 0.7331 & 0.0952 \\ -0.0781 & 0.905 \end{bmatrix} x(k) + \begin{bmatrix} 0.00484 \\ 0.0952 \end{bmatrix} u(k) + \begin{bmatrix} 0.269 \\ 0.0802 \end{bmatrix} y(k)$