

JYSçãÑÑ s ys-vÑÓ yÓ ÓÑŷ SéÑ# # úyÓ Ó

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+±ò â 86* EL' Ç, . wgE !AE€⁰ BαÕ ý Ě Ž # - ; & mý æ' E =y³ • „ , , L w Ě =• ; w
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$$\begin{cases} \dot{x} = Ax + Bu \\ y = Cx \end{cases} \quad \%80$$

< Z äã . >Füx = α αω₂ Ò + Ô c >Füu = δ₂ -DÀ'
>Füy = α -2(4 +±2(• - Kb3 X g

$$A = \begin{bmatrix} \hat{e}^- a_x & \beta \dot{y} \\ \hat{e}^- a_o & -a_{\beta \dot{y}} \end{bmatrix}$$

$$B = \begin{bmatrix} \hat{e}^- a_x \\ \hat{e}^- a_o \end{bmatrix} \alpha C = \beta \alpha ! \hat{O}$$

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$$\begin{cases} \dot{x} = Ax + BA \%0 + f \%00 \\ y = Cx \end{cases} \quad \%80$$

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#Û‡ ï 50 N , +±' /ø

NãU &2(4 E =y Ë - "Ç v

$$e_y = y - y_{uj}, \quad \%00$$

< Z äe_y = •.g 2(4 DÀ' C CW y_{uj} = •.g L->@ CW
+±4 %Ç v DÀ' A +±/ 3 g

$$e_{y\varphi} = \ddot{y} \quad \%80$$

EÐu Ä]

$$e_{y\varphi} = e_y = y - y_{uj} = Cx - y_{uj}, \quad \%00$$

3 £ 1 %00 < 5 £ Ä]

$$\begin{cases} \dot{x}_{uj} = A_{uj}x_{uj} + B_{uj}A \%0 + f \%00 + B_{e,y}y_{uj}, \\ y = C_{uj}x_{uj} \end{cases} \quad \%00$$

< Z "x_{uj} = %0_ç æ o \ Ë - ; +±ã . >Fü%Ë -
; 2(4 +±ã . - Kbg

$$A_{uj} = \begin{bmatrix} \ddagger C \\ \alpha A \end{bmatrix} \alpha B_{uj} = \begin{bmatrix} \hat{e} \hat{e} \\ \hat{e} \hat{e} \end{bmatrix}$$

$$C_{uj} = \alpha C \hat{O} \alpha B_{e,y} = \begin{bmatrix} \hat{e}^- I \\ \hat{e}^- I \end{bmatrix}$$

$$A = I "f \%0 = \ddot{A}] ' ó Ë -2(4$$

$$\begin{cases} \dot{x}_{uj} = A_{uj}x_{uj} + B_{uj}u + B_{e,y}y_{uj}, \\ y = C_{uj}x_{uj} \end{cases} \quad \%80$$

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& %00 < +±0Y- < E =y Û 3 Ä]

$$\dot{x}_{uj} = A_{uj}\dot{x}_{uj} + B_{uj}\dot{u} \quad \%00$$

$$z = \dot{x}_{uj} = \begin{bmatrix} \hat{e}^- y_{\varphi} \\ \hat{e}^- \dot{x} \end{bmatrix} "v = \dot{u} \quad \%00$$

Ä]

$$\dot{z} = A_{uj}z + B_{uj}v \quad \%8! 0$$

E6 ¹ NT6* 4 4 g

$$J = \ddot{U} Qz + v Rv \quad \%880$$

< Z "Q ¹ R \ E6 +±5 E/+± • Ç &/ Kb"EÐu -
E ÂP• ? g

$$v = \dot{u} = -R^{-\beta} Pz = - \%_ç \alpha K_q \begin{bmatrix} \hat{e}^- y_{\varphi} \\ \hat{e}^- \dot{x} \end{bmatrix} \quad \%800$$

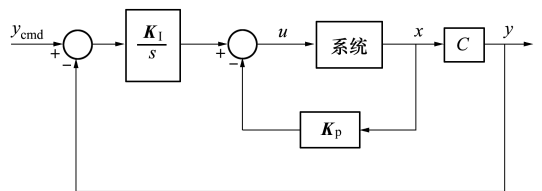
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$$A_{uj}P + PA_{uj} + Q - PB_{uj}R^{-\beta}B_{uj}P = ! \quad \%8 0$$

& %800 </ 3 Ä ' ó ÂP• KÇ Ô c • g

$$u_{b\varphi} = -K_x x_{uj} = -K_{\varphi y\varphi} - K_{\varphi x} \quad \%8x0$$

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$$+ \beta \alpha ' ó ÂP• KÇ Ô c s +$$

3 %8x0 < ' %00 < Ä] ï 50K (Ü Õ . N , g

$$\begin{cases} \dot{x}_{e,i} = A_{e,i}x_{e,i} + B_{e,i}y_{uj}, \\ y_{e,i} = C_{e,i}x_{e,i} \end{cases} \quad \%8" 0$$

< Z

$$A_{e,i} = A_{uj} - B_{uj}K_x \alpha C_{e,i} = C \quad \%8 0$$

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$$\in \Lambda 3 I "f \%0 3 \# "G) 7! ' ó Ô c • +±DÀ$$

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p & ' ó Ô c • E =y Ë - " h Ô c DÀ' g ' ó Ô

控制系统的传递函数

$$u = -K_{x_{ui}} x_{ui} + u_U = u_{b\phi} + u_U$$

系统的状态方程

$$\begin{cases} \dot{x}_{ui} = A_{\phi} x_{ui} + B_{\phi} u + A^{-\beta} \alpha_{b\phi} + \alpha_{\phi} \Phi \\ y = C_{\phi} x_{ui} \end{cases}$$

$$K_{\hat{u}} = I - A^{-\beta}$$

系统的输出方程

$$\bar{\Phi} x_{\phi} = \Phi x_{\phi}$$

系统的控制律

$$\bar{\Theta} = \Phi_{\hat{u}} \alpha_{\phi}$$

系统的特征方程

$$\begin{cases} \dot{x}_{ui} = A_{\phi} x_{ui} + B_{\phi} u + \bar{\Theta} \bar{\Phi} x_{\phi} + B_{\phi} y_{uj} \\ y = C_{\phi} x_{ui} \end{cases}$$

系统的误差方程

$$u_U = -\bar{\Theta} \bar{\Phi} x_{\phi}$$

系统的误差信号

系统的误差信号

$$e = x_{ui} - x_{ei}$$

系统的误差信号

$$\bar{\Theta} = \Gamma_{\bar{\Theta}} \bar{\Phi} x_{\phi} \alpha_{\phi} P_{\phi} B_{ui}$$

系统的误差信号

$$A_{\phi} P_{\phi} + P_{\phi} A_{\phi} = -Q_{\phi}$$

系统的误差信号

系统的误差信号

$$\Gamma_{\bar{\Theta}} = \begin{bmatrix} \alpha_{\phi} \Gamma_{\bar{\Theta}} & \ddot{\Theta} \\ \Gamma_{\bar{\Theta}} & \Gamma_{\bar{\Theta}} \end{bmatrix}$$

系统的误差信号

系统的误差信号

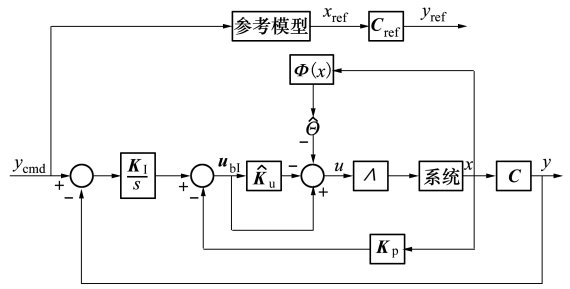
$$K_{\hat{u}} = \Gamma_{\hat{u}} \mu_{\phi} P_{\phi} B_{ui}$$

$$\bar{\Theta} = \Gamma_{\bar{\Theta}} \bar{\Phi} x_{\phi} \alpha_{\phi} P_{\phi} B_{ui}$$

系统的误差信号

$$u = u_{\phi} + u_U = -K_{x_{ui}} x_{ui} - \hat{K}_{\hat{u}} \mu_{\phi} - \bar{\Theta} \bar{\Phi} x_{\phi}$$

系统的误差信号



系统的误差信号

系统的误差信号

$$\begin{cases} \dot{x}_{ui} = A_{\phi} x_{ui} - B_{\phi} \bar{\Theta} \bar{\Phi} x_{\phi} - \bar{\Theta} \bar{\Phi} + B_{\phi} y_{uj} \\ y = C_{\phi} x_{ui} \end{cases}$$

$$\mu_{\bar{\Theta}} = \bar{\Theta} - \bar{\Theta}$$

系统的误差信号

$$\dot{e} = A_{\phi} e - B_{\phi} \mu_{\bar{\Theta}} \bar{\Phi}$$

系统的误差信号

$$V_{\mu_{\bar{\Theta}}} = e P_{\phi} e + \mu_{\bar{\Theta}} \Gamma_{\bar{\Theta}}^{-\beta} \mu_{\bar{\Theta}} \Lambda$$

系统的误差信号

$$\dot{V}_{\mu_{\bar{\Theta}}} = -e Q_{\phi} e - Q_{\phi} P_{\phi} B_{\phi} \mu_{\bar{\Theta}} \bar{\Phi} + \mu_{\bar{\Theta}} \Gamma_{\bar{\Theta}}^{-\beta} \mu_{\bar{\Theta}} \Lambda$$

系统的误差信号

$$a b = \mu_{\bar{\Theta}} \Lambda$$

系统的误差信号

$$\dot{V}_{\mu_{\bar{\Theta}}} = -e Q_{\phi} e + \mu_{\bar{\Theta}} \Gamma_{\bar{\Theta}}^{-\beta} \mu_{\bar{\Theta}} - \bar{\Theta} e P_{\phi} B_{\phi} \mu_{\bar{\Theta}} \Lambda$$

系统的误差信号

$$\bar{\Theta} = \Gamma_{\bar{\Theta}} \bar{\Phi} x_{\phi} \alpha_{\phi} P_{\phi} B_{ui}$$

系统的误差信号

$$\dot{V}_{\mu_{\bar{\Theta}}} = -e Q_{\phi} e$$

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