

the  $\mathcal{H}_\infty$  norm of the closed-loop system is bounded by  $\gamma$ .

Let  $\mathcal{H}_\infty$  norm of the closed-loop system be denoted by  $\gamma_{\text{cl}}$ . Then

$$\gamma_{\text{cl}} = \sqrt{\lambda_{\max}(\mathbf{P})} \quad (10)$$

where  $\mathbf{P}$  is the solution of the Lyapunov equation

$$(\mathbf{A} - \mathbf{B}\mathbf{K})^T \mathbf{P} + \mathbf{P}(\mathbf{A} - \mathbf{B}\mathbf{K}) + \mathbf{C}^T \mathbf{C} = -\mathbf{Q} \quad (11)$$

with  $\mathbf{Q}$  being a positive definite matrix. The  $\mathcal{H}_\infty$  norm of the closed-loop system can be expressed as

$$\gamma_{\text{cl}} = \sqrt{\lambda_{\max}(\mathbf{P})} = \sqrt{\lambda_{\max}(\mathbf{P}^{-1})} \quad (12)$$

where  $\mathbf{P}^{-1}$  is the inverse of  $\mathbf{P}$ . The  $\mathcal{H}_\infty$  norm of the closed-loop system can be expressed as

$$\gamma_{\text{cl}} = \sqrt{\lambda_{\max}(\mathbf{P})} = \sqrt{\lambda_{\max}(\mathbf{P}^{-1})} \quad (13)$$

where  $\mathbf{P}^{-1}$  is the inverse of  $\mathbf{P}$ . The  $\mathcal{H}_\infty$  norm of the closed-loop system can be expressed as

$$\gamma_{\text{cl}} = \sqrt{\lambda_{\max}(\mathbf{P})} = \sqrt{\lambda_{\max}(\mathbf{P}^{-1})} \quad (14)$$

where  $\mathbf{P}^{-1}$  is the inverse of  $\mathbf{P}$ . The  $\mathcal{H}_\infty$  norm of the closed-loop system can be expressed as

$$\gamma_{\text{cl}} = \sqrt{\lambda_{\max}(\mathbf{P})} = \sqrt{\lambda_{\max}(\mathbf{P}^{-1})} \quad (15)$$

where  $\mathbf{P}^{-1}$  is the inverse of  $\mathbf{P}$ . The  $\mathcal{H}_\infty$  norm of the closed-loop system can be expressed as

$$\gamma_{\text{cl}} = \sqrt{\lambda_{\max}(\mathbf{P})} = \sqrt{\lambda_{\max}(\mathbf{P}^{-1})} \quad (16)$$

where  $\mathbf{P}^{-1}$  is the inverse of  $\mathbf{P}$ . The  $\mathcal{H}_\infty$  norm of the closed-loop system can be expressed as

$$\gamma_{\text{cl}} = \sqrt{\lambda_{\max}(\mathbf{P})} = \sqrt{\lambda_{\max}(\mathbf{P}^{-1})} \quad (17)$$

where  $\mathbf{P}^{-1}$  is the inverse of  $\mathbf{P}$ . The  $\mathcal{H}_\infty$  norm of the closed-loop system can be expressed as

$$\gamma_{\text{cl}} = \sqrt{\lambda_{\max}(\mathbf{P})} = \sqrt{\lambda_{\max}(\mathbf{P}^{-1})} \quad (18)$$

where  $\mathbf{P}^{-1}$  is the inverse of  $\mathbf{P}$ . The  $\mathcal{H}_\infty$  norm of the closed-loop system can be expressed as

$$\gamma_{\text{cl}} = \sqrt{\lambda_{\max}(\mathbf{P})} = \sqrt{\lambda_{\max}(\mathbf{P}^{-1})} \quad (19)$$

where  $\mathbf{P}^{-1}$  is the inverse of  $\mathbf{P}$ . The  $\mathcal{H}_\infty$  norm of the closed-loop system can be expressed as

$$\gamma_{\text{cl}} = \sqrt{\lambda_{\max}(\mathbf{P})} = \sqrt{\lambda_{\max}(\mathbf{P}^{-1})} \quad (20)$$