

the \mathcal{H}_∞ norm of the closed-loop system is bounded by

$$\|\mathcal{H}_\infty\| \leq \sqrt{\lambda_{\max}(P)} \quad (10)$$

where P is the solution of the Lyapunov equation

$$A^T P + P A - B B^T = -I \quad (11)$$

and $\lambda_{\max}(P)$ is the maximum eigenvalue of P .

Since the system is stable, the Lyapunov equation (11)

$$A^T P + P A - B B^T = -I \quad (12)$$

has a unique solution P given by

$$P = \int_0^\infty e^{A^T t} B B^T e^{A t} dt \quad (13)$$

and the \mathcal{H}_∞ norm of the closed-loop system is

$$\|\mathcal{H}_\infty\| = \sqrt{\lambda_{\max}(P)} \quad (14)$$

where $\lambda_{\max}(P)$ is the maximum eigenvalue of P .

Since the system is stable, the Lyapunov equation (11)

$$A^T P + P A - B B^T = -I \quad (15)$$

has a unique solution P given by

$$P = \int_0^\infty e^{A^T t} B B^T e^{A t} dt \quad (16)$$

and the \mathcal{H}_∞ norm of the closed-loop system is

$$\|\mathcal{H}_\infty\| = \sqrt{\lambda_{\max}(P)} \quad (17)$$

where $\lambda_{\max}(P)$ is the maximum eigenvalue of P .

the \mathcal{H}_∞ norm of the closed-loop system is bounded by

$$\|\mathcal{H}_\infty\| \leq \sqrt{\lambda_{\max}(P)} \quad (18)$$

where P is the solution of the Lyapunov equation

$$A^T P + P A - B B^T = -I \quad (19)$$

and $\lambda_{\max}(P)$ is the maximum eigenvalue of P .

Since the system is stable, the Lyapunov equation (19)

$$A^T P + P A - B B^T = -I \quad (20)$$

has a unique solution P given by

$$P = \int_0^\infty e^{A^T t} B B^T e^{A t} dt \quad (21)$$

and the \mathcal{H}_∞ norm of the closed-loop system is

$$\|\mathcal{H}_\infty\| = \sqrt{\lambda_{\max}(P)} \quad (22)$$

where $\lambda_{\max}(P)$ is the maximum eigenvalue of P .

Since the system is stable, the Lyapunov equation (19)

$$A^T P + P A - B B^T = -I \quad (23)$$

has a unique solution P given by

$$P = \int_0^\infty e^{A^T t} B B^T e^{A t} dt \quad (24)$$

and the \mathcal{H}_∞ norm of the closed-loop system is

$$\|\mathcal{H}_\infty\| = \sqrt{\lambda_{\max}(P)} \quad (25)$$

where $\lambda_{\max}(P)$ is the maximum eigenvalue of P .