

Norwalk, California

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4. The \mathcal{H}_∞ norm of the system is bounded by γ if and only if the following two conditions are satisfied: (i) the system is asymptotically stable; (ii) the following linear matrix inequality (LMI) is satisfied:

$$\begin{bmatrix} A & B & 0 \\ B^T & -\gamma^2 I & 0 \\ 0 & 0 & -\gamma^2 I \end{bmatrix} < 0 \quad (1)$$

where I is the identity matrix of appropriate dimension. The LMI (1) can be solved using standard software packages such as MATLAB's LMI toolbox. The \mathcal{H}_∞ norm of the system is then given by the square root of the largest eigenvalue of the matrix $\gamma^2 I$.

EE 5748



SCALE: 1/8"=1'-0"

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