DYNAMICS OF THE LINEAR MODEL GAME

$$\dot{z} = Az + Bu + Cv, \qquad t \in [0, T],\ z \in R^6,$$

$$A = \left[\begin{array}{c|c} A_1 & 0 \\ \hline 0 & A_1 \end{array}\right], \quad A_1 = \begin{bmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \\ 0 & 0 & -1/k_P \end{bmatrix},$$

$$B^{\mathrm{T}} = (1/k_P) \left[\begin{array}{ccc|ccc} 0 & 0 & 1 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & 0 & 0 & 1 \end{array}\right],$$

$$C^{\mathrm{T}} = \left[\begin{array}{ccc|ccc} 0 & -1 & 0 & 0 & 0 & 0 \\ \hline 0 & 0 & 0 & 0 & -1 & 0 \end{array}\right],$$

$$u \in P = \left\{ u \,:\, u^{\mathrm{T}} \begin{bmatrix} 1/\cos^2\chi_P & 0 \\ 0 & 1 \end{bmatrix} u \leqslant a_P^2 \right\},$$

$$v \in Q = \left\{ v \,:\, v^{\mathrm{T}} \begin{bmatrix} 1/\cos^2\chi_E & 0 \\ 0 & 1 \end{bmatrix} v \leqslant a_E^2 \right\},$$

$$J[z(\cdot)] = \sqrt{z_1^2(T) + z_4^2(T)} \to \min_u \max_v .$$