AA ECE ME 548: Linear Multivariable Control

Prof Burden TA Tinu Spring 2020

exams: grading in progress; results ~ Mon May 11

today: ~~☐ ~10 min breakout discussion & follow-up~~

- ☑ HW 3 solution Q's (self-assessment due Sun May 10)
- ☑ MIMO stability margins
- ☑ exercise: combine observer w/ (LQ) full-state feedback
- ☐ Q's about lectures on "randomness", least squares

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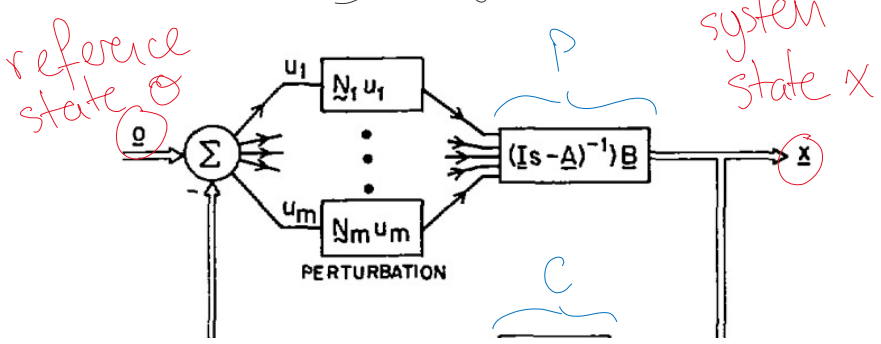
* update project page

MIMO stability margins



def: gain and phase margin for input $k \in \{1, \dots, m\}$ are largest pure gain or phase shift in N_k that keeps closed-loop system

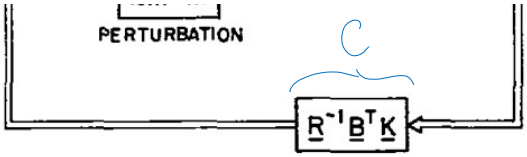


Fig. 3. LQSF regulator with noninteracting perturbations in each control loop.

keeps closed-loop system
T_{xo} stable

[Safonov & Athans 1977]

- considers "open loop xfer matrix" $L = PC$
  → I mistakenly thought L_{ij} could tell us