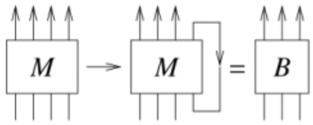
Abstract Linear Control Theory

May 1, 2016 5:49 PM

Linear Control Theory.

If $\begin{pmatrix} y \\ y_n \end{pmatrix} = \begin{pmatrix} \Xi & \phi \\ \theta & \alpha \end{pmatrix} \begin{pmatrix} x \\ x_n \end{pmatrix}$, and we further impose $x_n = y_n$, then $y = Bx$ where $B = \Xi + \dfrac{\phi\theta}{1-\alpha}$. This fully explains the Gassner formulas and the GGA formula!



$V \xrightarrow{M} W$ $\quad V = V' \oplus V_0$

$W = W' \oplus W_0$

$\dim V = \dim W = n$

$A : V_0 \to W_0$

$\dim V_0 = \dim W_0 = k$

$L_M = \{(v, Mv)\} \subset V \oplus W = V' \oplus W' \oplus V_0 \oplus W_0$

dim/codim is n

$L_A = \{(v_0, Av_0)\} \subset V_0 \oplus W_0$

$\tilde{L}_A = \{(v, w) : (v_0, w_0) \in L_A\}$ codim is k

$L_M \cap \tilde{L}_A$ has codim $n+k$ so dim $n-k$.

Generically

$$\begin{tikzcd} & L_M \cap \tilde{L}_A \arrow[dl] \arrow[dr] & \\ V' & & W' \end{tikzcd}$$

are both isomorphisms, so we get a map $V' \to W'$.

That's awful!