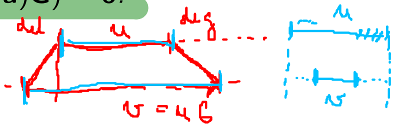
.

Věta

Něchť je **G** *generující matice. Následující podmínky jsou ekvivalentní:*

1. ~~**G** *je minimální.*~~
2. $\mathcal{K}(\mathcal{Z}(\mathbf{u})\mathbf{G}) \in \mathcal{C}$, *právě když* $\mathcal{K}(\mathcal{Z}(\mathbf{u})\mathbf{G}) = \mathbf{0}$.
3. *Pro každé* $\mathbf{u}$ *platí*
   a) $\deg \mathbf{u} \leq \deg \mathbf{uG}$,
   b) $\mathrm{del}\, \mathbf{u} \geq \mathrm{del}\, \mathbf{uG}$.
4. **G** *má polynomiální pravý inverz a současně pravý inverz polynomiální v* D^{-1}.



$$g : [u]_G \longmapsto [uG]_{\mathcal{C}}$$

prostě

$$S_G^*(u) = 0 \longmapsto 0 = \mathcal{C}^* = \{ w \in \mathcal{C} \mid k(w) \in \mathcal{C} \}$$

$\{u \mid k(\ell(u)G) = 0\}$ $[u]_G$

$[u] \longmapsto 0$

p. 8. $\boxed{k(\ell(u)G)} \in \mathcal{C}$

$\quad\quad\quad \overset{\shortparallel}{S_G(u)}$

$\boxed{5} \xrightarrow{\ \mathcal{C}\ }$

$\boxed{0} \xrightarrow{\ \mathcal{C}\ }$

$$k(uG) \in \mathcal{C}$$

$$u = \ell(u) + k(u)$$

$$k(\ell(u)G) + k(\underbrace{k(u)G}_{= k(u)G}) \in \mathcal{C}$$

(2) „POUZE NULOVÝ ABS. STAV JE KÓDOVÉ SLOVO"

(3) „VÝSTUP ROZTAHUJE VSTUP"

prostě

$(2) \Leftrightarrow (3)$

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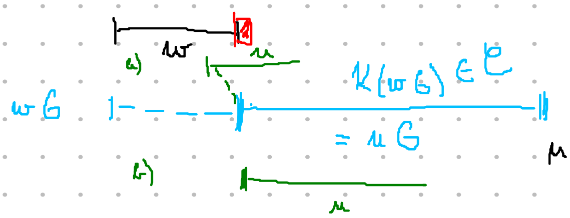
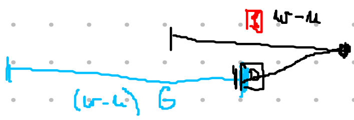
① $\neg(2) \Rightarrow \neg(3)$ $\quad 0 \neq k(wG) \in \mathcal{C} \quad w = \ell(w)$



del $u < 0$ ✓

$$(\underbrace{w - u}_{u'})G = wG - uG$$

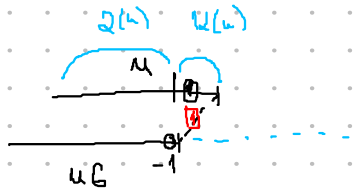


$\deg u'G < \deg u'$

② $\quad (2) \Rightarrow (3)$

$\quad\quad \neg(3) \Rightarrow \neg(2)$

¬a)



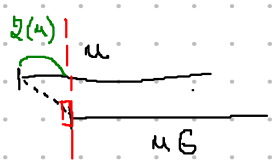
$\deg uG = -1$

$k(uG) = 0 \quad\quad k(u) \neq 0$

$\quad\quad\quad\quad\quad\quad\quad k(u)G \neq 0$

$$0 \neq k(u)G = k(uG) - k(\ell(u)G) = -k(\ell(u)G) = \mathcal{C}$$

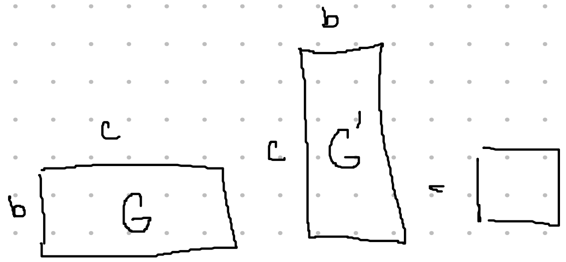
¬b)



$k(\ell(u)G)$

$$uG = \ell(u)G + k(u)G$$

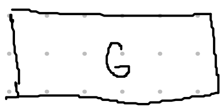
$$0 \neq k(uG) = uG = \underbrace{k(\ell(u)G)}_{\in \mathcal{C}} + k(u)G$$



$G \cdot G' = I_{b\times b}$

$\uparrow$ PR. INV. G

$(G')_{ij} \in \mathbb{F}[D]$



$G'_{-1} \in \underline{\mathbb{F}[D^{-1}]}$ $\quad \dots\dots \boxed{a_0} + a_1 D^{-1} + \dots + a_m D^{-m}$

$G \cdot G'_{-1} = I_{b\times b}$

$g_{ij} \in \underline{\mathbb{F}(D)}$

$g_{ij} = \boxed{\frac{p}{q}}$ $\quad p, q \in \mathbb{F}[D]$

$$\frac{1+2D+3D^2}{D+D^4} = \underbrace{\frac{D^{-4}}{D^{-4}} \cdot \frac{\quad}{\quad}}_{} = \frac{3D^{-2}+2D^{-3}+D^{-4}}{1+D^{-3}}$$

$$\underline{\mathbb{F}(D) = \mathbb{F}(D^{-1})} \qquad \mathbb{F}((D)) \neq \mathbb{F}((D^{-1}))$$

$$1+D+D^2+D^3+\dots\dots \quad = \frac{1}{1+D}$$

$1 : 1+D = 1 + \dots\dots$

$1 : D+1 = D^{-1} + \dots\dots$

$$\frac{1}{1+D} = \frac{D^{-1}}{1+D^{-1}} = D^{-1} \cdot \left(\underbrace{\frac{1}{1+D^{-1}}}_{=c}\right) = D^{-1}\left(1+D^{-1}+D^{-2}+D^{-3}\right) = D^{-1}+D^{-2}+D^{-3}+\dots$$

$$1+D+D^2\dots\dots \quad = D^{-1}+D^{-2}+D^{-3}+\dots\dots$$

$\mathbb{F}_2$ $\quad 1 + \; D^4+D^3+D^{-1}+1+D+D^2+D^3 \quad = 0$

$$\frac{1}{1+D} + \frac{1}{1+D} = 0$$