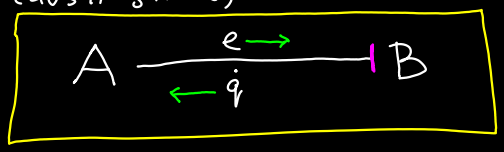
DOPLNĚNÍ INFORMACE O KAUZALITĚ DO VAZEBNÍHO GRAFU

= určení, které veličiny jsou VSTUPY (= podněty) a které VÝSTUPY (= reakce)

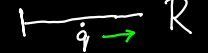
KAUZÁLNÍ ZNAČKA (angl. causal stroke)



Zdroje: S_e (e →) | (žádná volnost)

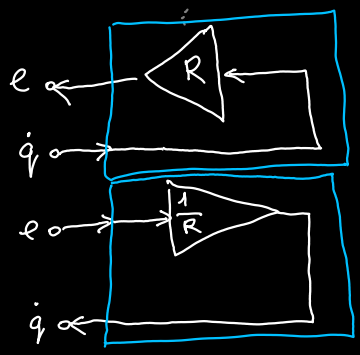
S_f (← q)

Rezistor: $e := f_e(\dot{q})$, $e = R \cdot \dot{q}$



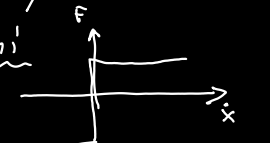
nebo: $\dot{q} = f_{\dot{q}}(e)$, $\dot{q} = \frac{1}{R} e$

nebo obecně $f_e(\cdot)$

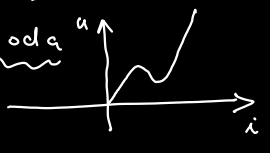


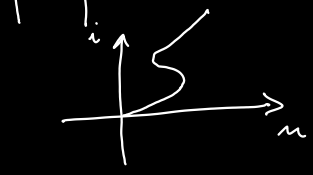
! $f_e(\,)$ nebo $f_{\dot{q}i}(\,)$ nemusí existovat

Př.: suché tření



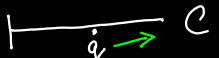
tunelová dioda





ZOB. PODDAJNOST:

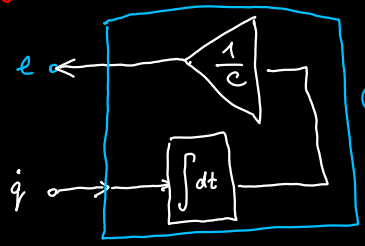
$$e = \frac{1}{C} \cdot q = \frac{1}{C} \int \dot{q}\, dt$$

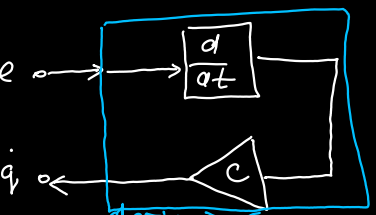


nebo:

$$q = C \cdot e \quad / \frac{d}{dt}$$
$$\dot{q} = C \cdot \dot{e}$$

! 0 integrační kauzalita



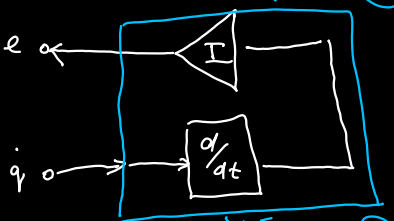


derivační kauzalita ☹

ZOB. SETRVAČNOST

$e = \dot{p}$

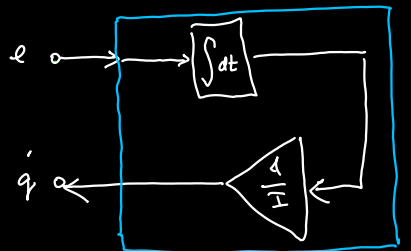
$$p = I \cdot \dot{q} \quad / \frac{d}{dt}$$
$$e = I \cdot \frac{d}{dt} \dot{q}$$



derivační kauzalita ☹

nebo

$$\dot{q} = \frac{1}{I} p = \frac{1}{I} \int e\, dt$$



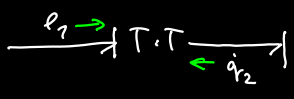
integrační kauzalita ☺

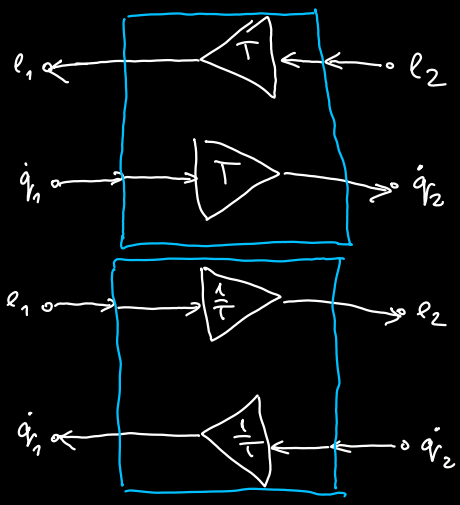
ZOB. TRANSFORMÁTORY:

$$\dot{q}_2 = T \cdot \dot{q}_1 \;, \quad e_1 = T \cdot e_2$$

nebo

$$\dot{q}_1 = \frac{1}{T}\,\dot{q}_2 \;, \quad e_2 = \frac{1}{T}\,e_1$$



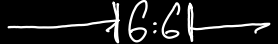


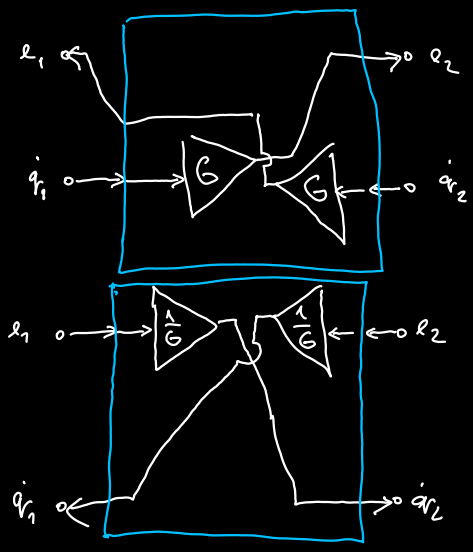
ZOB. GYRÁTORY:

$$e_2 = G \cdot \dot{q}_1 \;, \quad e_1 = G \cdot \dot{q}_2$$

nebo

$$\dot{q}_1 = \frac{1}{G} \cdot e_2 \;, \quad \dot{q}_2 = \frac{1}{G} \cdot e_1$$

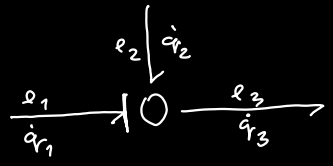




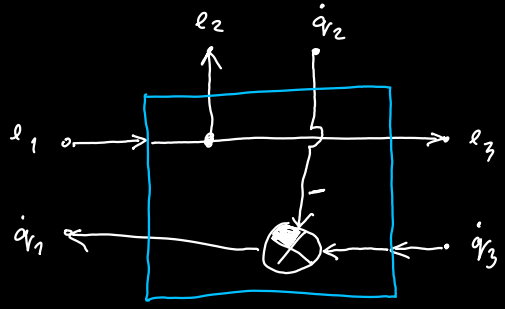
SPOJE TYPU 0:

$$e_1 = e_2 = e_3$$

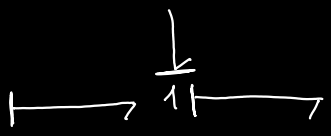
$$\dot{q}_1 + \dot{q}_2 = \dot{q}_3$$



$$\dot{q}_1 = \dot{q}_3 - \dot{q}_2$$



SPOJE TYPU 1:



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