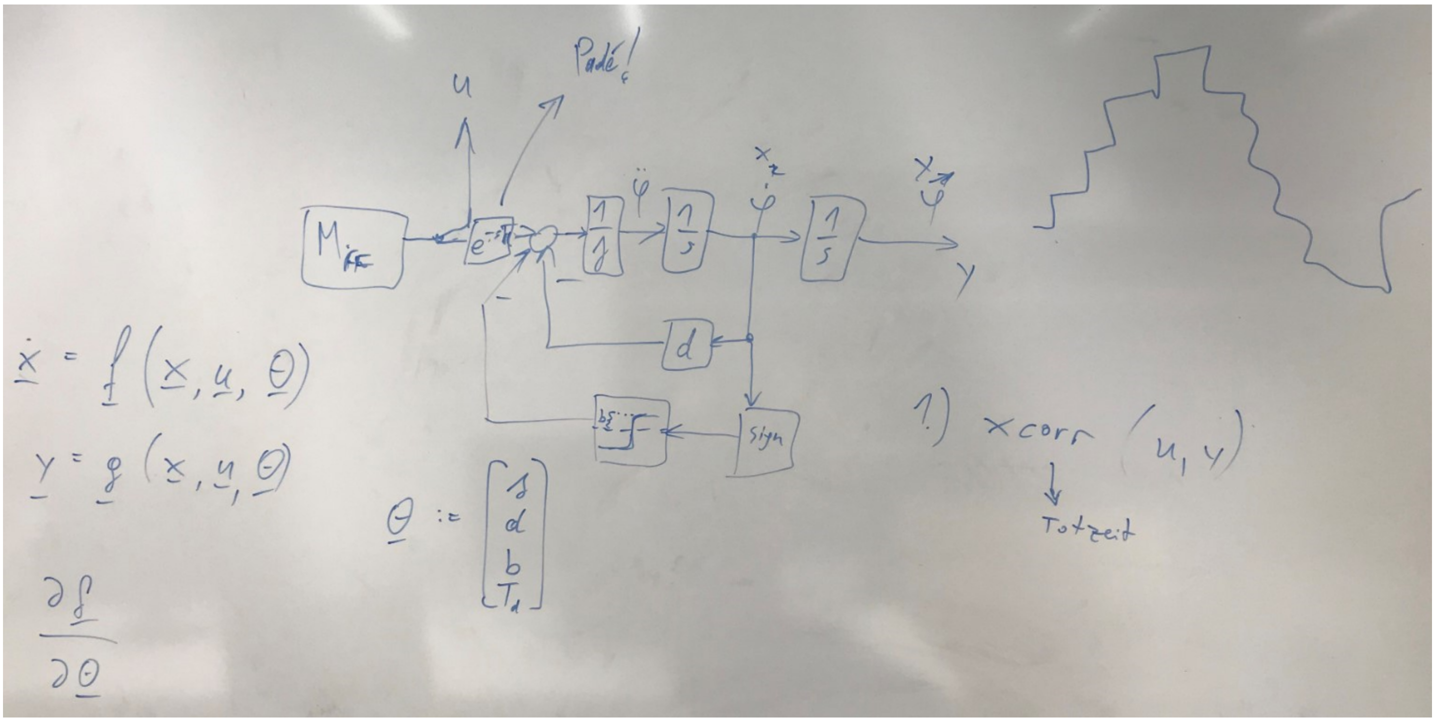
Projektarbeit — **Systemidentifikation** — 17.06.2020

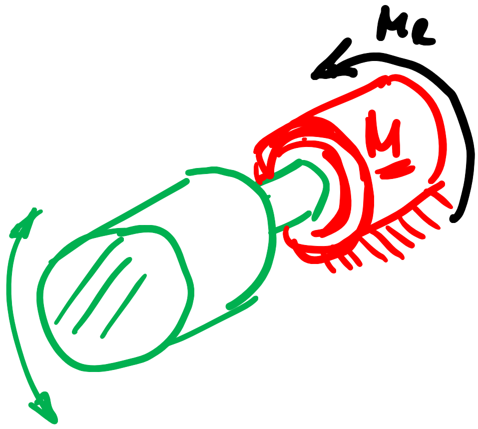


$$\boxed{\ddot{\varphi} = \frac{1}{J}\left[M_{FF} - d\dot{\varphi} - b\,\mathrm{sign}(\dot{\varphi})\dot{\varphi}\right]}$$ ... complete model

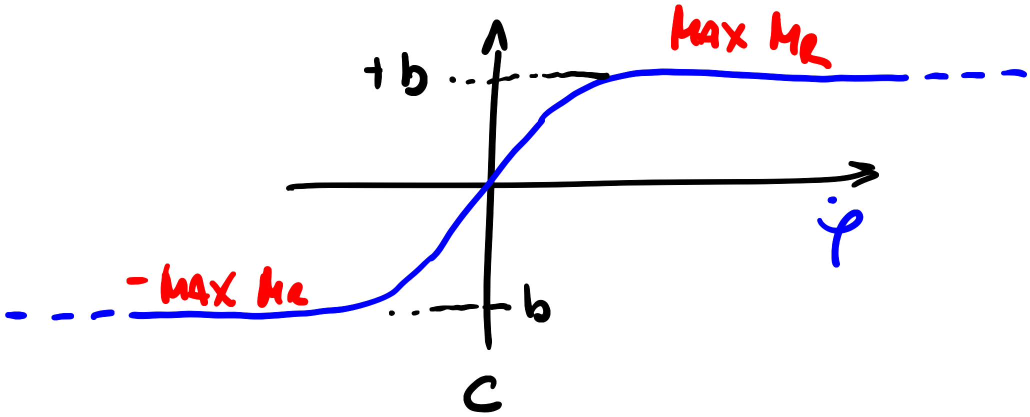
$$\ddot{\varphi} = \frac{1}{J}\left[M_{ff} - d\dot{\varphi}\right]$$ ... reduced Model 1

$$\ddot{\varphi} = \frac{1}{J}\left[M_{ff} - b\,\mathrm{sign}(\dot{\varphi})\dot{\varphi}\right]$$ ... reduced Model 2

for stick-slip



$$b\left[\frac{2}{1+e^{-a(x-c)}} - 1\right]$$ Sigmoid



Hysterese???

$$\ddot{\varphi} = \frac{1}{J}\left[M_{ff} - b\left[\frac{2}{1+e^{-a\dot{\varphi}}} - 1\right]\right]$$

Modell 1

$$= \frac{1}{J}\left[M_{ff} + b - \frac{2b}{1+e^{-a\dot{\varphi}}}\right] \quad !!$$

$$\Theta = [J, b, a]$$

$$\ddot{\varphi} = \frac{1}{J}\left[M_{ff} - b - d\dot{\varphi} - \frac{2b}{1+e^{-a\dot{\varphi}}}\right]$$

Modell 2

$$\Theta = [J, b, a, d]$$

$$e^{-Ts} \approx \frac{T}{1+0{,}5Ts} \Rightarrow$$ PADÉ-APPROXIMATION

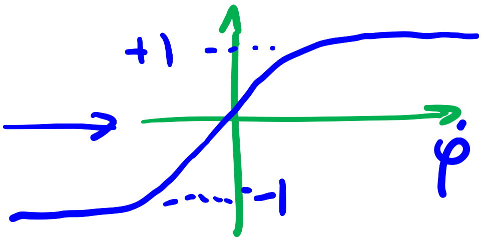
! OHNE EINMAL PROBIEREN

$$M_{FF_{sys}}(1+0{,}5Ts) = T\, M_{FF_{IN}}$$

$$\boxed{M_{FF_{sys}} + 0{,}5T\cdot \dot{M}_{FF_{sys}} = T\, M_{FF_{IN}}} \Rightarrow M_{FF_{sys}} =)$$

Other signum Fkt.

$$\frac{2}{\pi}\arctan(a\dot{\varphi}) \longrightarrow$$



$$\left[\frac{4}{\pi}\arctan(a\dot{\varphi}) - 1\right] b$$