ECE 404-TD / 504-TD

ST: T&D APPLICATIONS OF VOLTAGE SOURCE CONVERTERS

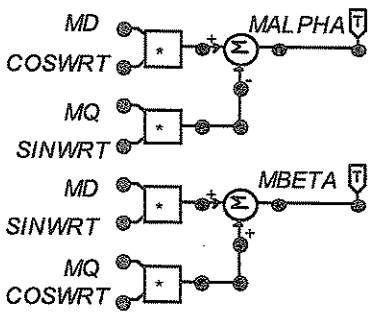
SESSION no. 36

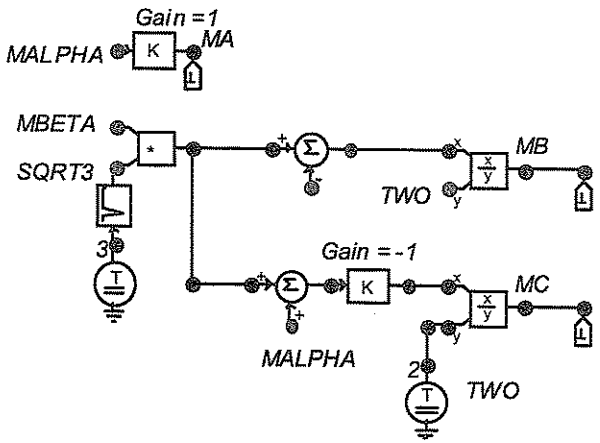
University of Idaho

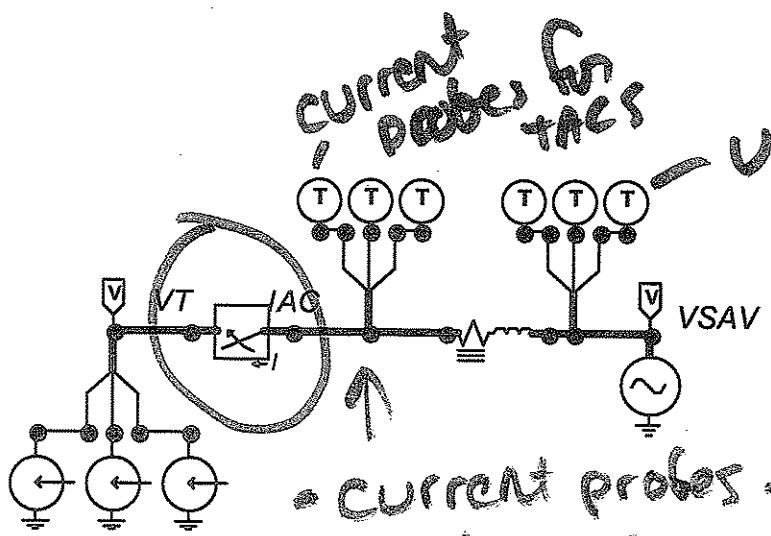
- HW due date (HW5)
  - → lecture 39, April 22

L36 2/11

Convert MD and MQ alpha-beta and then to ABC domain







- current probes - connected to ~~node~~ node with switch
- TACS interprets current as coming from node into switch regardless of network polarity that

Problem 1 on homework

- with open loop control and P, Q calculated neglecting Resistance

→ The calculated $|V_t|\angle\delta$ will not give precise match of P, Q in AMP or EMTDC

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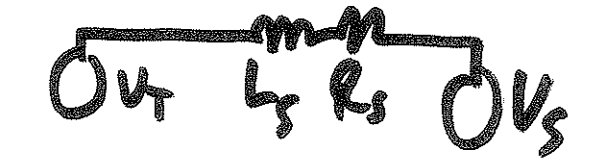
$K_p \rightarrow$ Proportional gain

K_i - integral gain

If i_d, i_q are constant in steady state

$$\frac{K_i}{K_p} = \frac{R_s}{L_s}$$



$$\frac{K_p}{L_s} = \frac{1}{\tau_i}$$

$\tau_i \rightarrow$ Time constant of desired response $\rightarrow$ Book using 5ms

If in synch ref

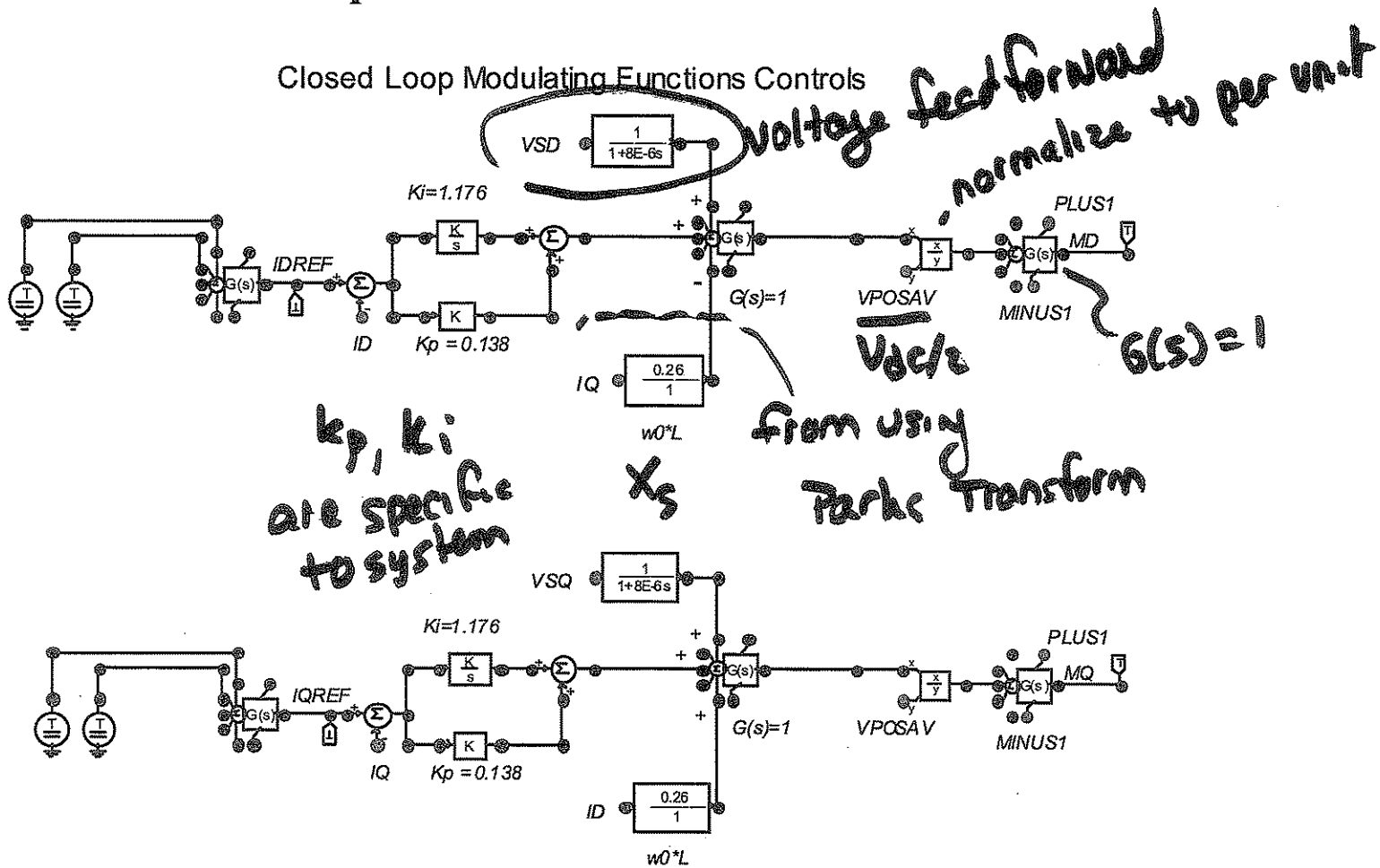
frame → change

$\omega_0 L$ in cross

coupling term in

control loop

Closed Loop Controls



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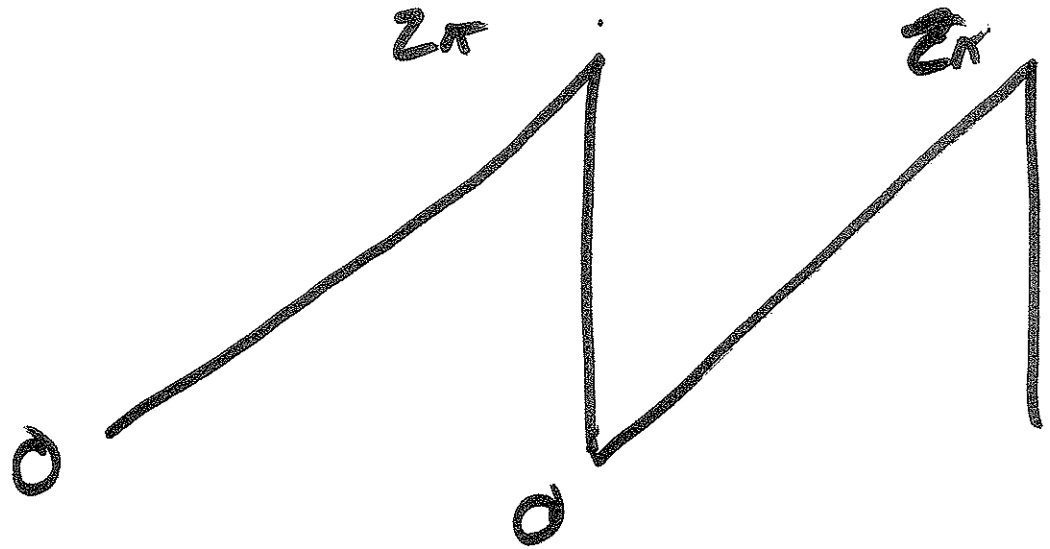
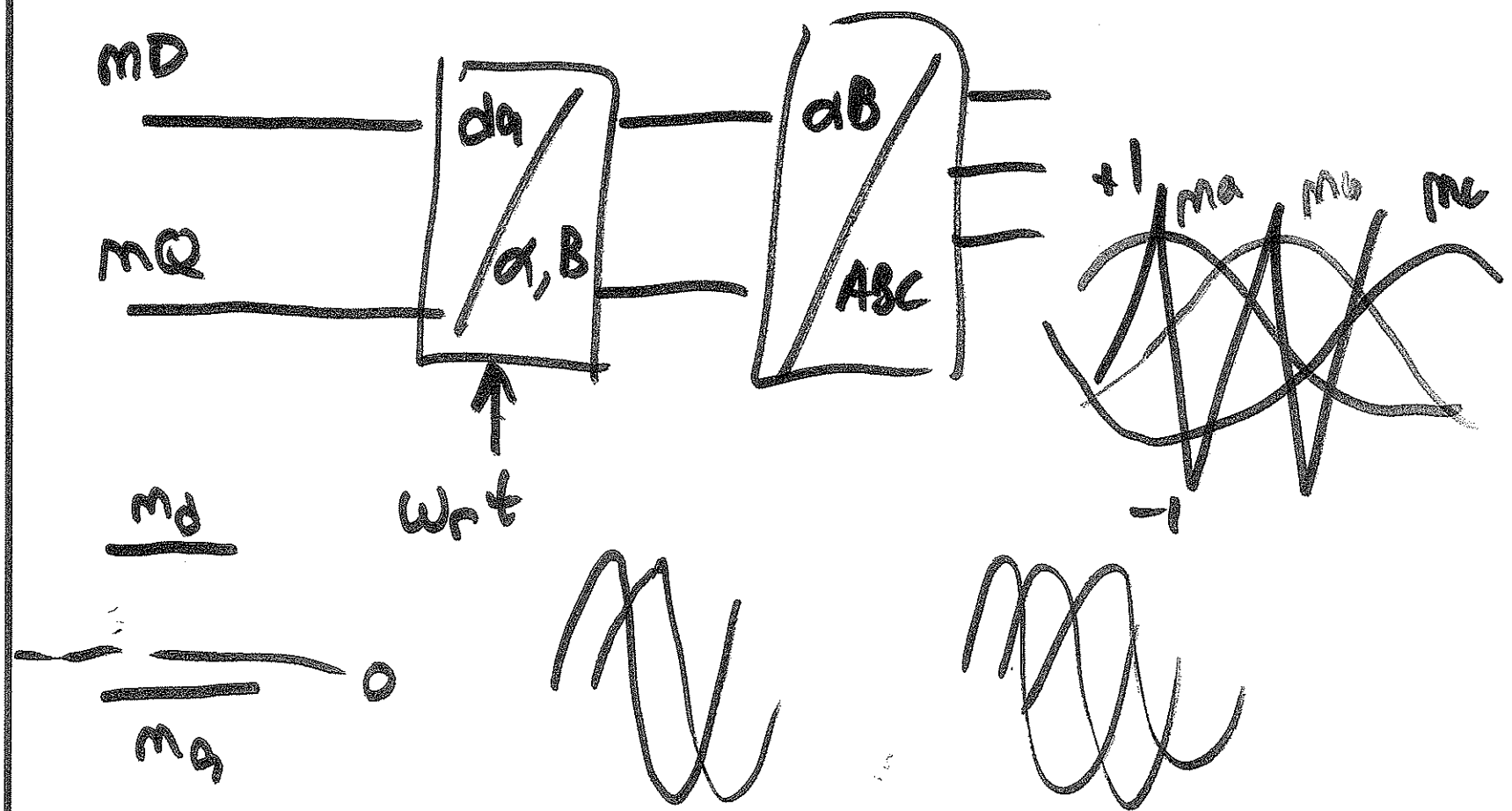
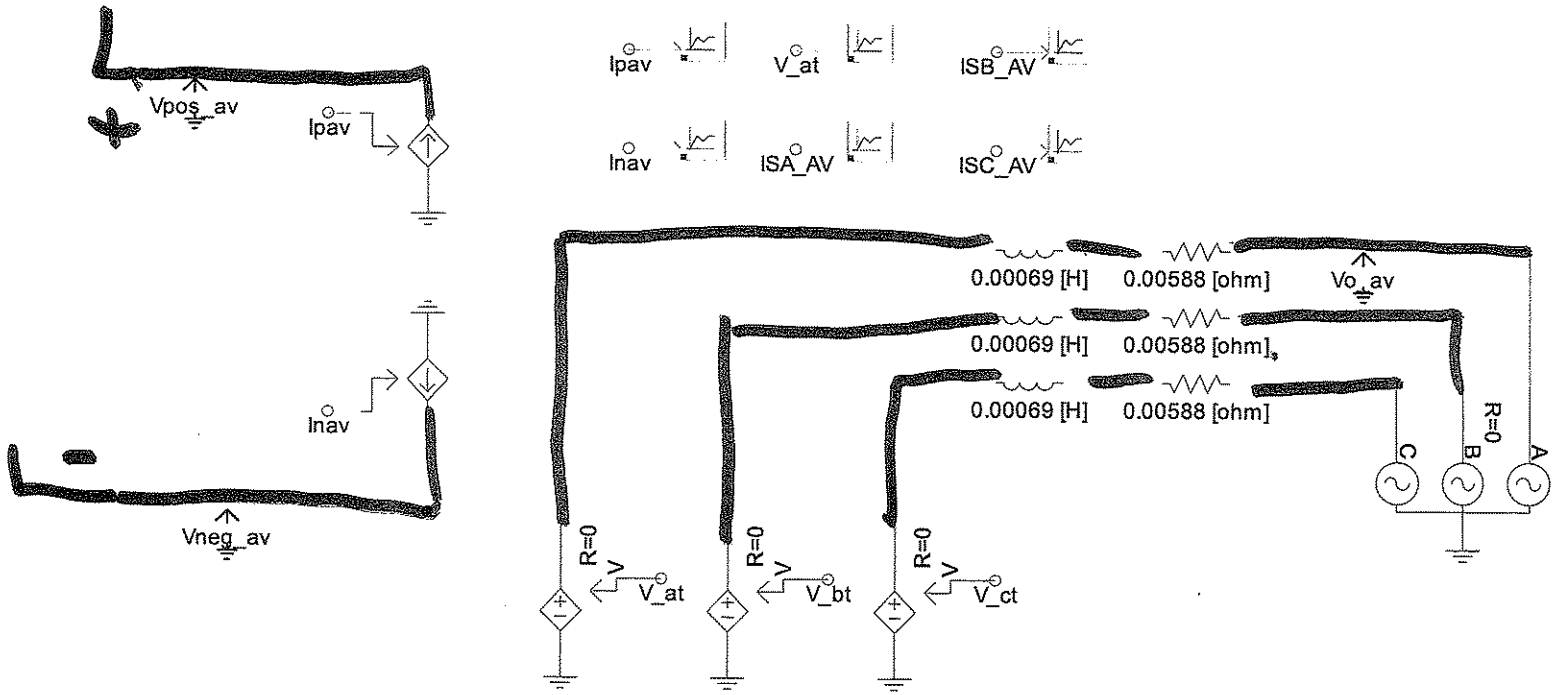
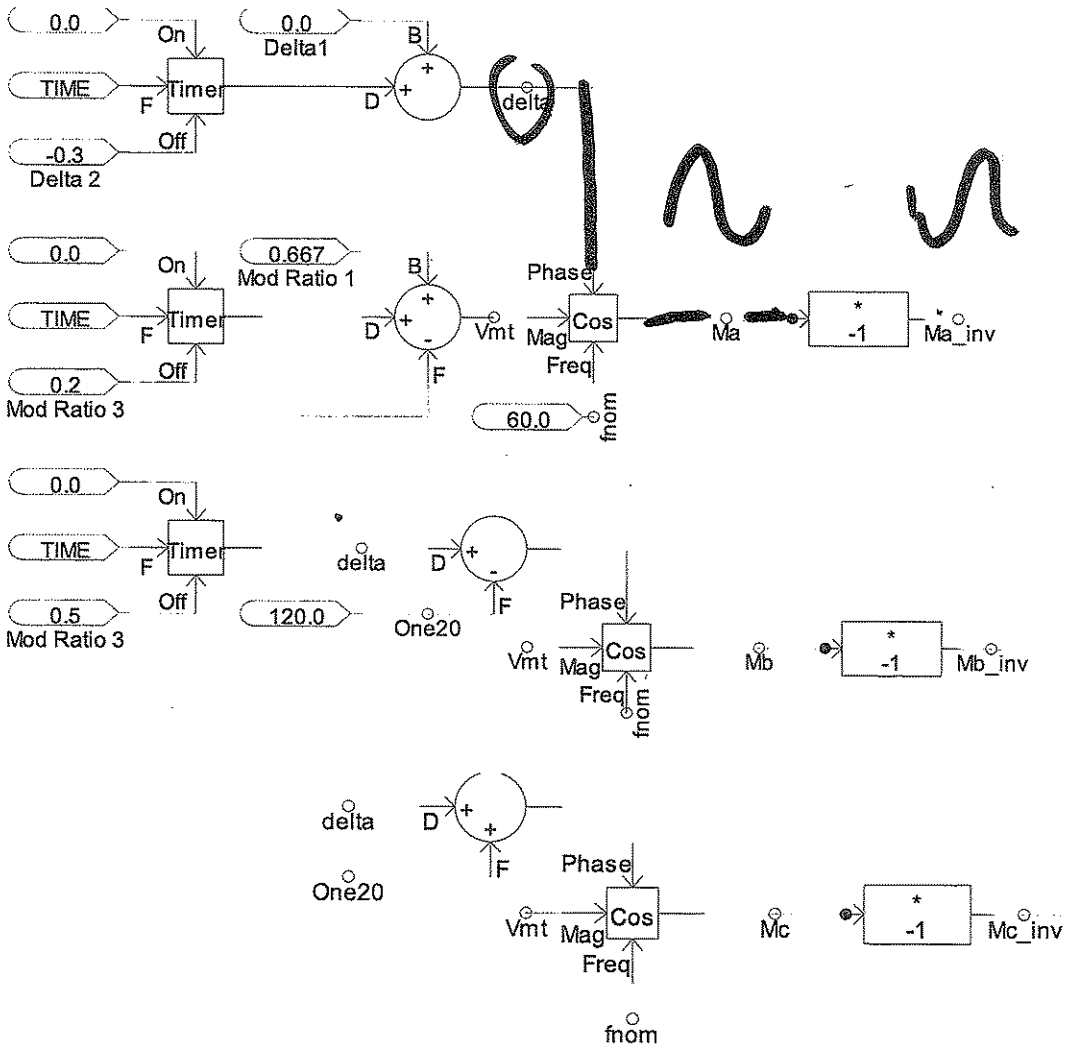



mD
mQ
dq
a,B
aB
ABC
+1
-1
wrt
md
mq
0

- Averaged Model Power Circuit (note DC links tied to switching model to reduce node count)



- Create Open-loop Modulating Functions



PSCAD/EMTDC Implementation of Three Phase Averaged Models

- Switching circuit