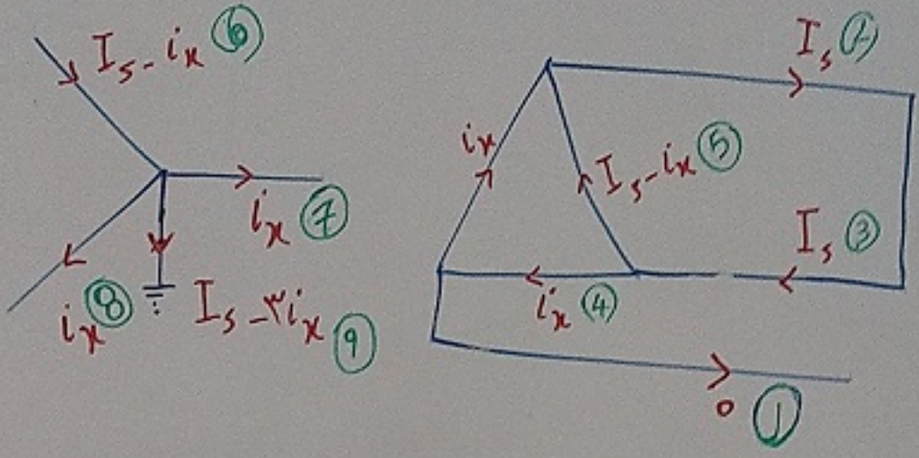
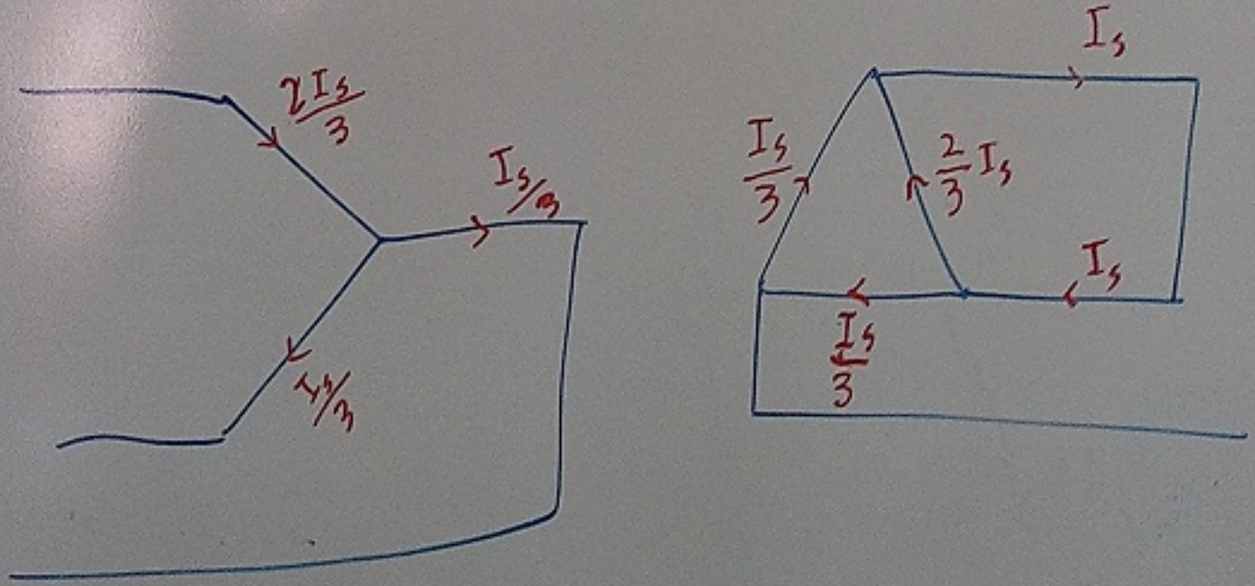
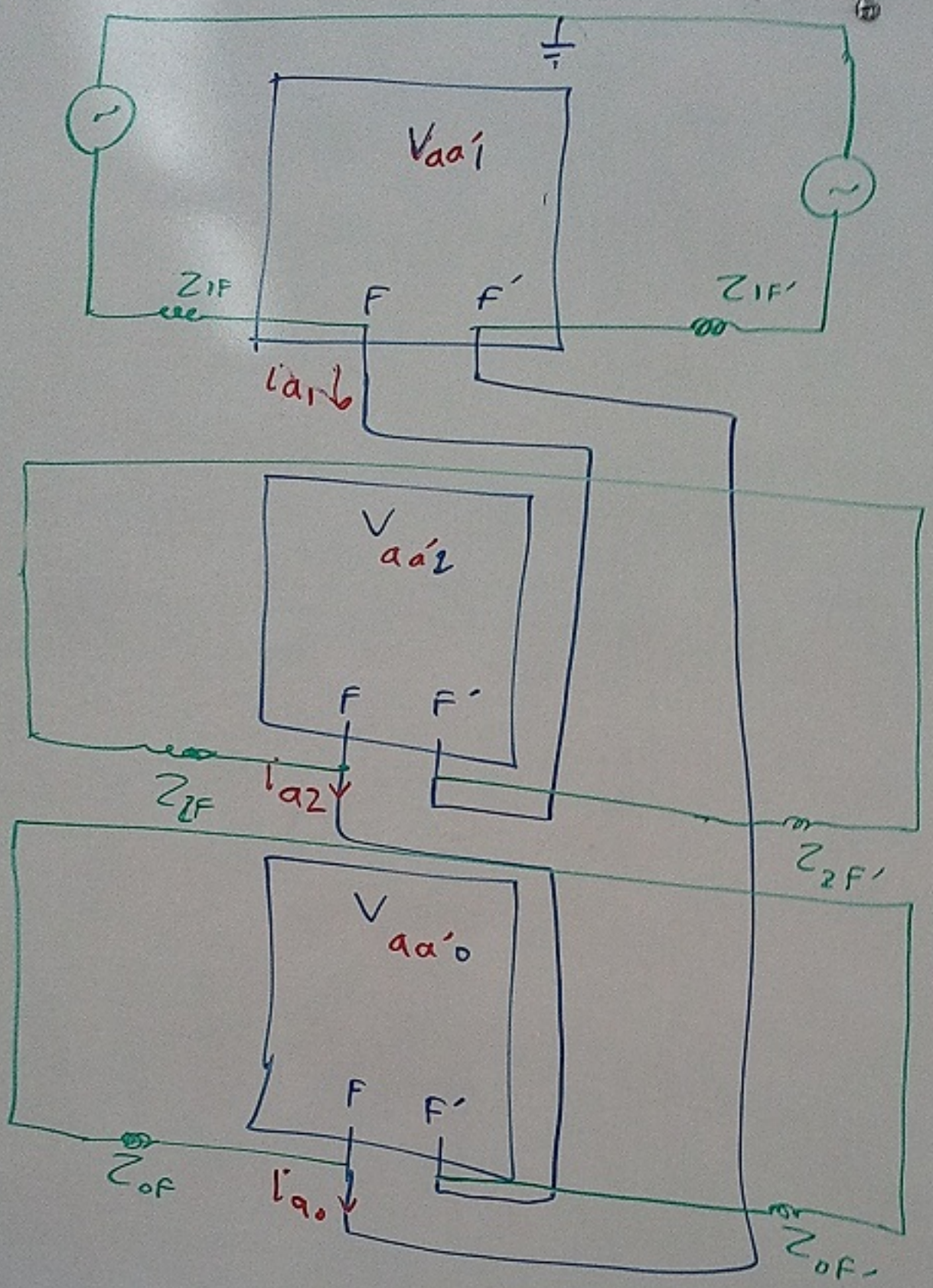
2 phase fault for Y-Δ transformer



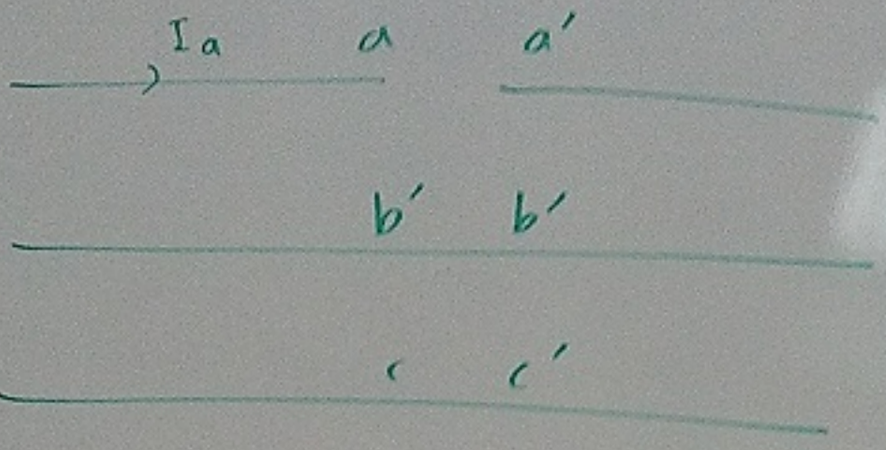
minimum reluctance $\Rightarrow \sum \phi = 0 \Longrightarrow$

$$I_s - 2i_x = 0 \Longrightarrow i_x = \frac{I_s}{2} \quad (10)$$



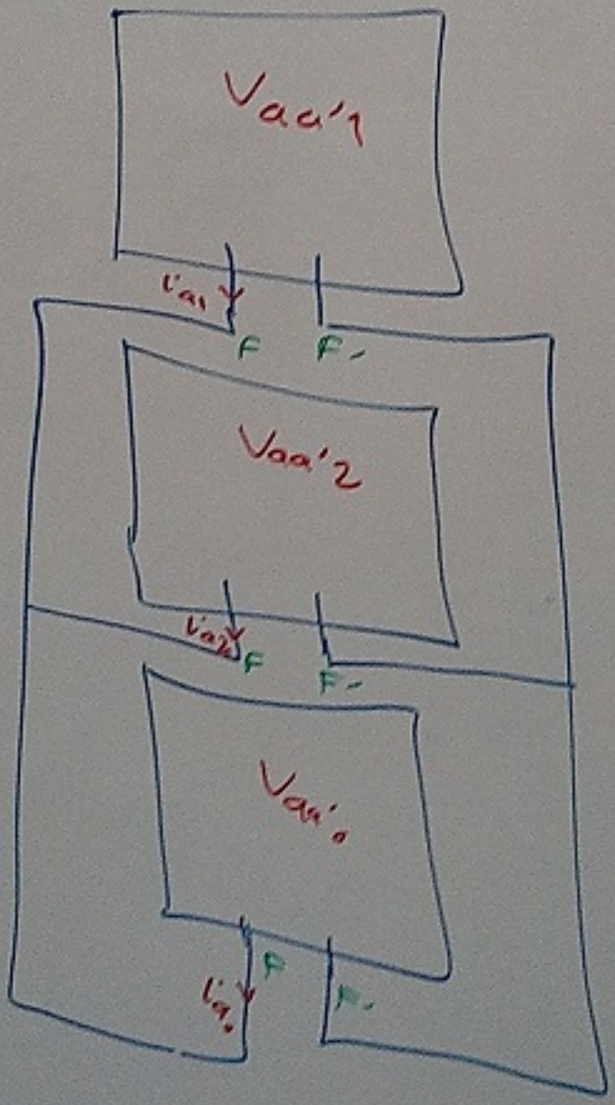

Vaa'1
Z1F
F
F'
Z1F'
Ia1
Va'a2
F
F'
Z2F
Ia2
Z2F'
Va'a0
F
F'
Z0F
I'a0
Z0F'

one conductor opens:



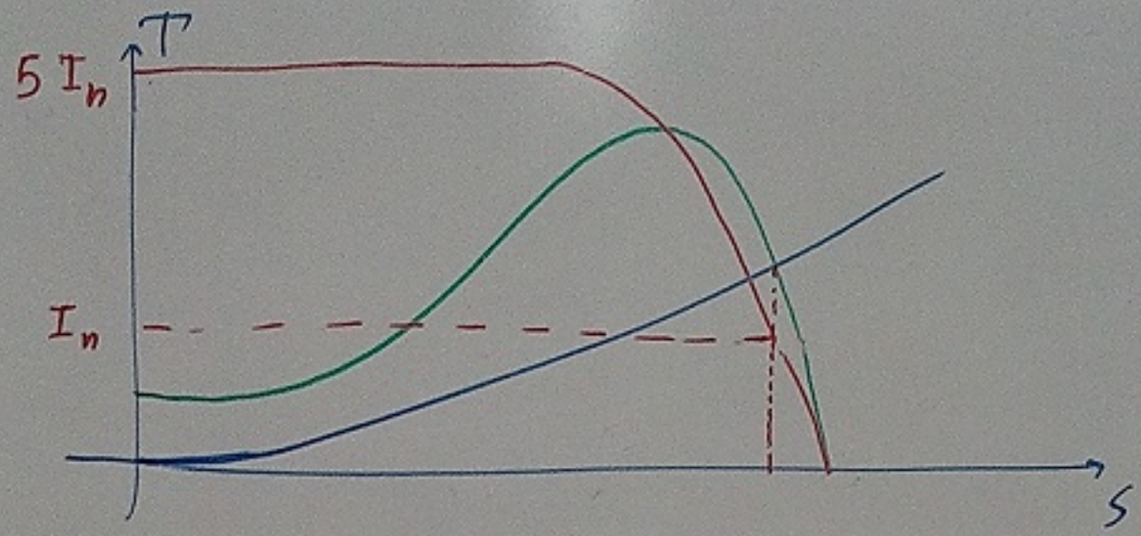
$$I_a = 0 \Longrightarrow I_{a0} + I_{a1} + I_{a2} = 0$$

$$V_{bb'} = V_{cc'} = 0 \Longrightarrow V_{aa'0} = V_{aa'1} = V_{aa'2}$$



Motor starting:

induction motor graph:



direct connection:

with driver

⇓

{ a set of power electronic switches & controling instruments }

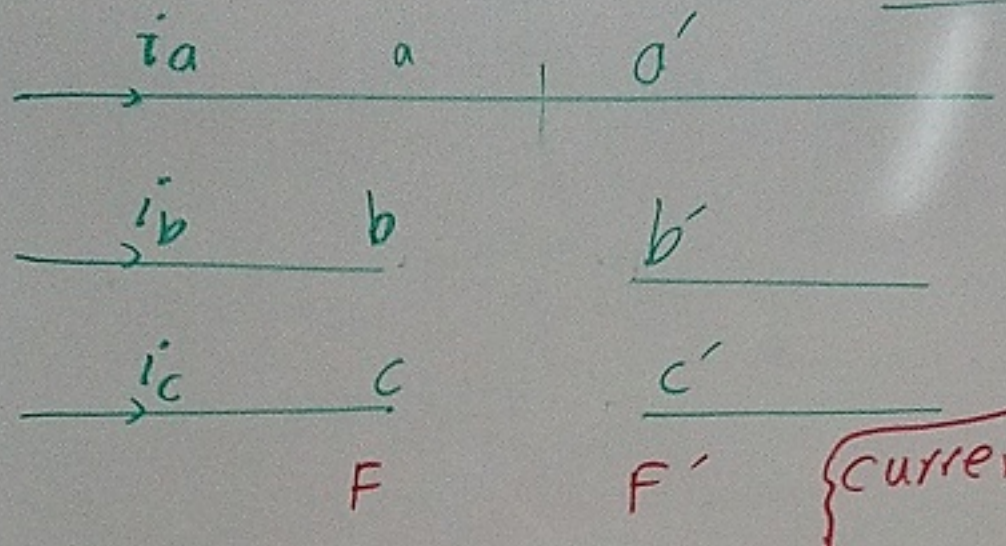
2 type ⇒
- single (uni-) direction ⇒ { give active power to motor }
- double (bi-) direction ⇒ { give active power motor & give active power to grid }

in sc. condition behave similar to generator

open conductor:

two-conductor open

two conductors opn



current : I_{load} , I_{sc}

current of the faulted line is high (x', x")

difference between { to ground / open conductor

current : load , 0
no x', x"

$$\begin{cases} V_{aa'} = 0 \\ I_b = I_c = 0 \end{cases} \Longrightarrow \begin{cases} V_{aa'0} + V_{aa'1} + V_{aa'2} = 0 \\ I_{a0} = I_{a1} = I_{a2} = \frac{1}{3} I_a \end{cases}$$

based phasor is "a" i.e.

$$\begin{bmatrix} I_a \\ I_b \\ I_c \end{bmatrix}$$