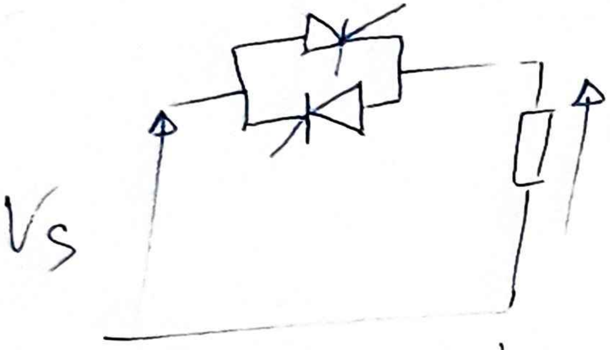


$$V_{ch} = R I_{ch} + L \frac{dI_{ch}}{dt}$$

$$\underline{\beta = \pi/6}$$

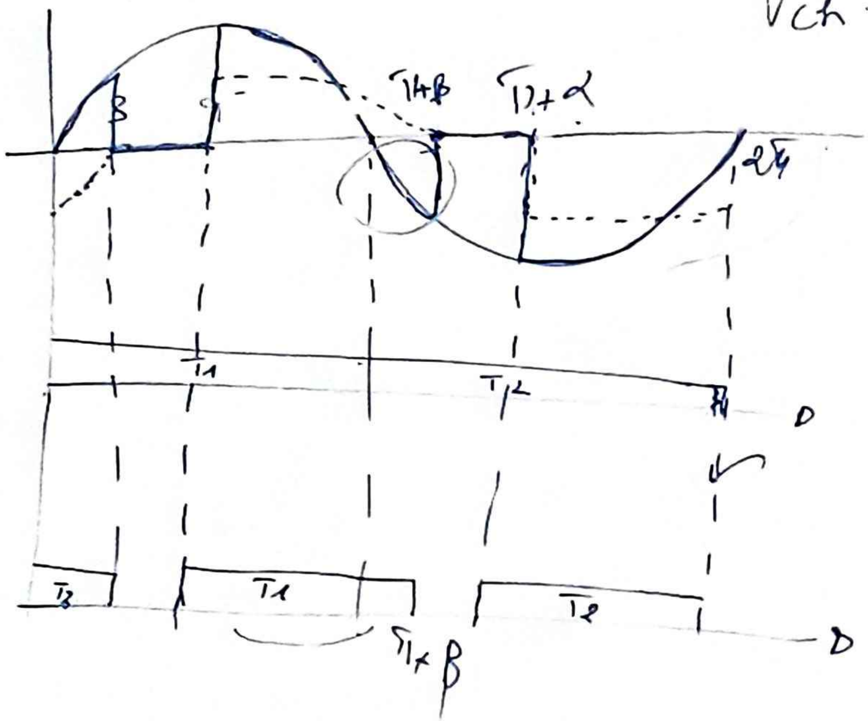
① $V_S - V_{T_1} - V_{ch} = 0$

② $V_S + V_{T_2} - V_{ch} = 0$

$i_S = i_{T_1} - i_{T_2} = i_{ch}$

$\alpha_1 > \beta$; $\alpha_2 = \beta$; $\alpha_3 < \beta$

1^{er} cas :



I_{ch}

dt

$\pi/6$

$3 \; \beta$

V_{ch}

π

① $V_S - V_{T_1} - V_{ch} = 0$

② $V_S + V_{T_2} - V_{ch} = 0$

$$i_S = i_{T_1} - i_{T_2} = i_{ch}.$$

$$V_{ch_{eff}}^2 = \frac{2}{2\pi} \int_{\alpha}^{\pi+\beta} V_m^2 \sin^2(\theta)\, d\theta.$$

$$= \frac{V_m^2}{\pi} \int_{\alpha}^{\pi+\beta} \frac{1-\cos 2\theta}{2}\, d\theta.$$

$$= \frac{V_m^2}{2\pi} \left(\theta - \frac{\sin 2\theta}{2} \right)_{\alpha}^{\pi+\beta}.$$

$$= \frac{V_m^2}{2\pi} \left(\pi+\beta-\alpha + \frac{\sin 2\alpha}{2} - \frac{\sin(2\beta)}{2} \right)$$

$$V_{ch}(\theta) = R I_{ch} + L \frac{dI_{ch}}{d\theta}$$

$I_{ch}(\theta) = A$

$I_{ch}(\ ) = 0$;

$I_{ch}(\beta) = 0 =$

$I_{ch}(\theta) = I_{ch\,h} + I_{ch\,p}$

$I_{ch\,p} = \frac{V_{ch}(\theta)}{R}$

$$\text{Eqh}: \quad R I_{ch} + L \frac{dI_{ch}}{d\theta} = 0$$

$= V_m \sin\theta$

$$I_{ch} = -\frac{L}{R} \frac{dI_{ch}}{d\theta}$$

$$\frac{dI_{ch}}{I_{ch}} = -\frac{R}{L} d\theta$$

$\sqrt{a}$

$y + ay' = 0$

$y = Ae^{\int a}$

$$\ln(I_{ch}) = -\frac{R}{L} \times \theta + cte$$

$$I_{ch_h}(\theta) = Ae^{-\frac{R}{L}\theta}$$

$A = cte$

$$I_{ch}(\theta) = A e^{-\frac{R}{L}\theta} + \frac{V_{ch}(\theta)}{R}$$

$$I_{ch}(\beta) = 0 = A e^{-\frac{R}{L}\beta} + \frac{V_m \sin \beta}{R} =$$

Charg $\underline{\underline{R}}$ 2

$$P = \frac{V_{cheff}^2}{R} \quad , \quad Q = \frac{V_{cheff}^2}{L\omega}$$

$$S = V_{cheff} \cdot I_{eff}$$

$$S = \sqrt{V_{cheff}^4 \left(\frac{1}{R^2} + \frac{L}{L^2 \omega^2} \right)}$$

$$= V_{cheff}^2 \times \sqrt{\frac{1}{R^2} + \frac{1}{L^2 \omega^2}}$$

$$+\frac{V_{ch}\cos}{R}$$

$$\frac{R}{L}\beta$$

$$+\frac{V_m \sin\beta}{R} =$$

$$, Q = \frac{V_{ch\,eff}^2}{L\omega} \Rightarrow S = \sqrt{P^2+Q^2}$$

$$\Rightarrow \frac{S}{V_{ch\,eff}} = I_{eff}$$

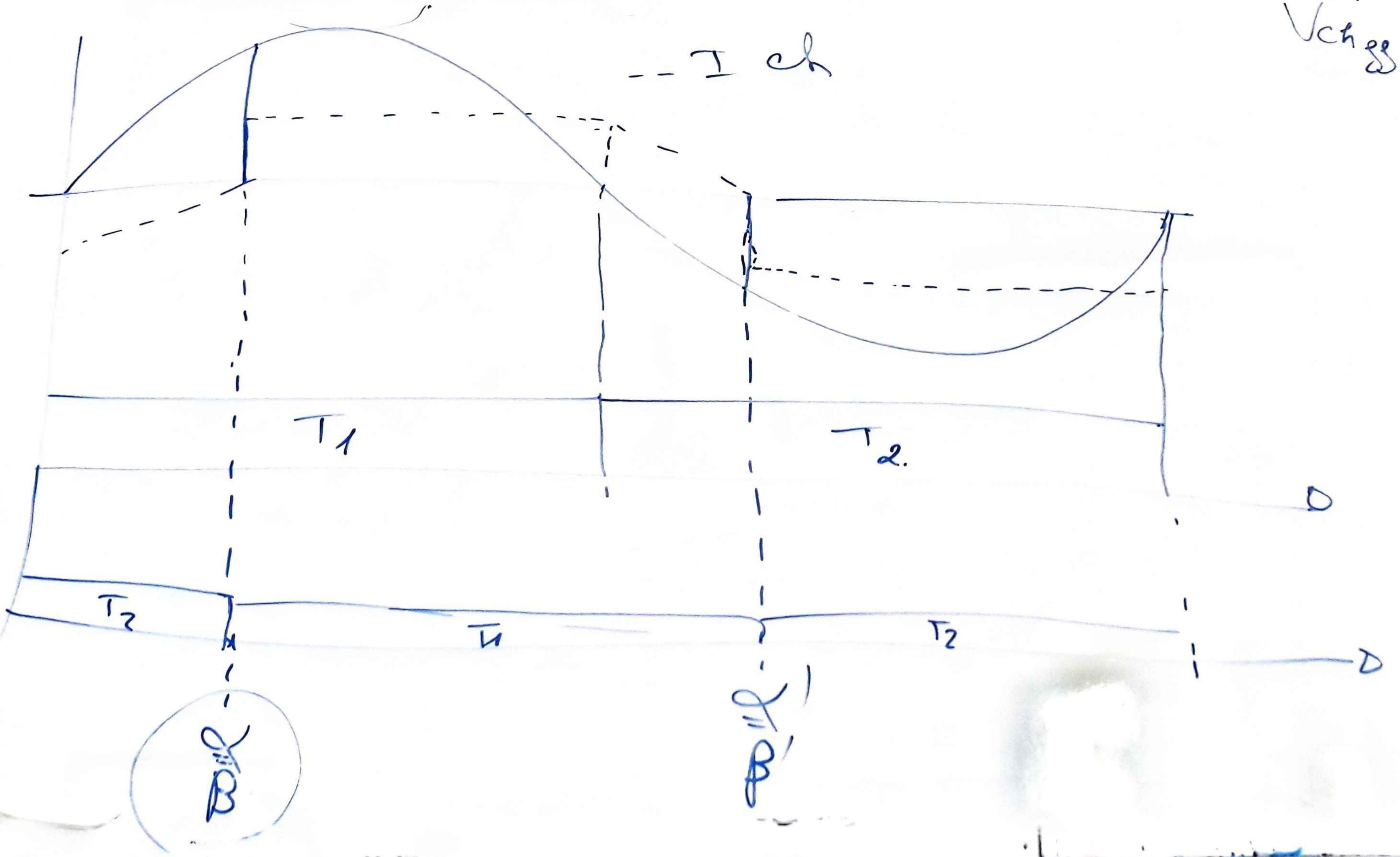
$$. I_{eff}$$

$$\left(\frac{1}{R^2} + \frac{1}{L^2\omega^2}\right)$$

$$I_{eff} = \frac{\sqrt{P^2+Q^2}}{V_{ch\,eff}}$$

$$\times \sqrt{\frac{1}{R^2}+\frac{1}{L^2\omega^2}}$$

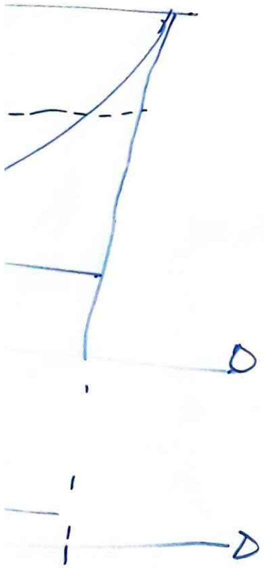
$\alpha_1 > \beta \; ; \; \alpha_2 = \beta \; ; \; \alpha_3 < \beta$



① $V_S - V_{T_1} - V_{ch} = 0$

② $V_S + V_{T_2} - V_{ch} = 0$

$$i_S = i_{T_1} - i_{T_2} = i_{ch}.$$



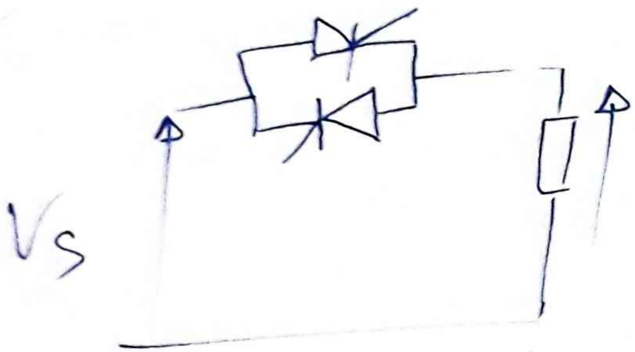
$$V_{ch_{eff}}^2 = \frac{2}{2\pi}\int_0^{\pi} V_m^2 \sin^2\theta \, d\theta.$$

$$= \frac{V_m^2}{2\pi}\int_0^{\pi} \left(1 - \cos(2\theta)\right) d\theta.$$

$$= \frac{V_m^2}{2\pi}\left[\theta - \frac{\sin 2\theta}{2}\right]_0^{\pi}$$

$$= \frac{V_m^2}{2\pi}\,\pi = \frac{V_m^2}{2}$$

$$V_{ch} = \frac{V_m}{\sqrt{2}}.$$



$$V_{ch} = R I_{ch} + L \frac{dI_{ch}}{dt}$$

$$\beta = \pi/6$$

① $V_S - V_{T_1} -$

② $V_S + V_{T_2} -$

$i_S = i_{T_1} - i_{T_2}$

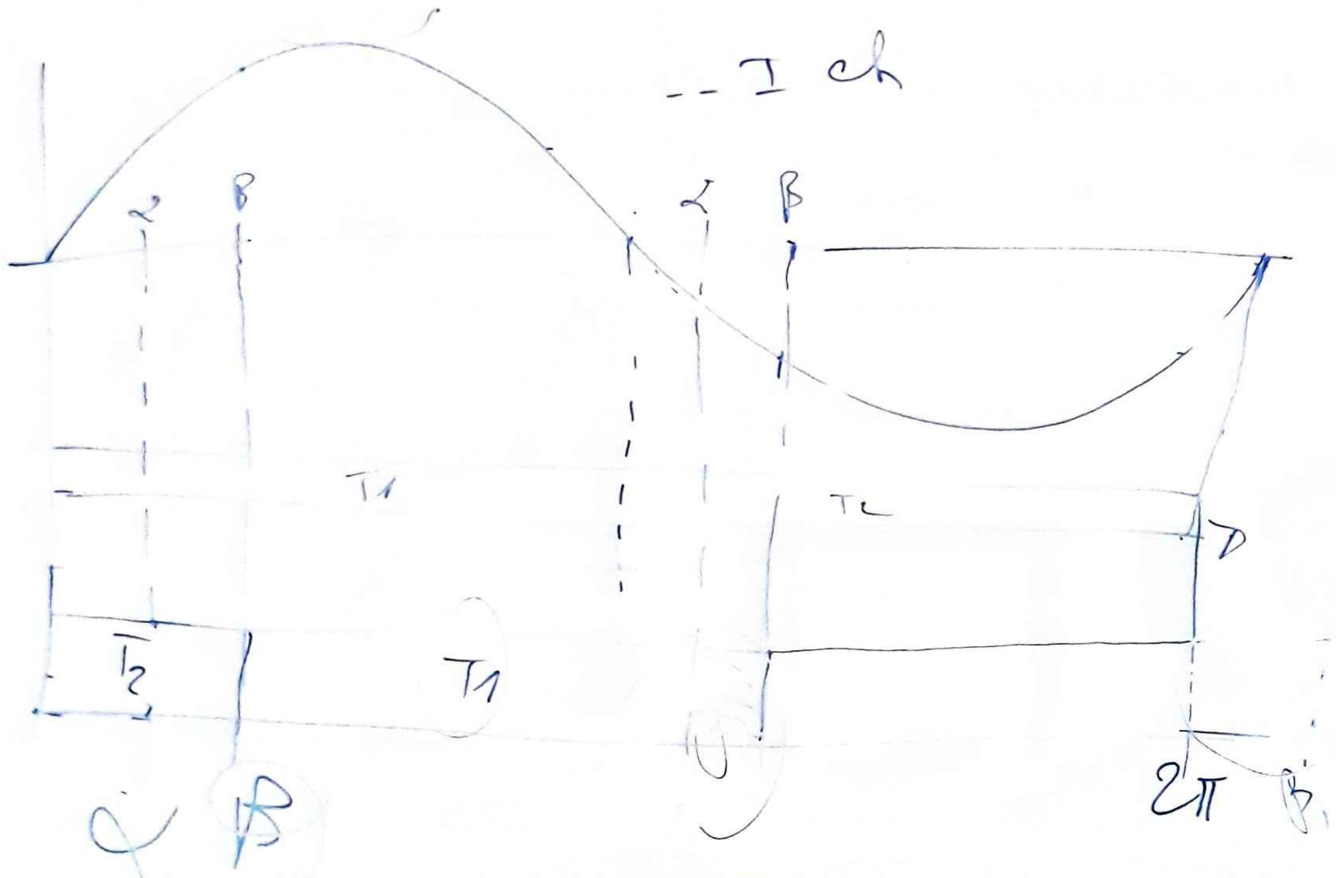
$\alpha_1 > \beta$; $\alpha_2 = \beta$; $\alpha_3 < \beta$

Cas 3 :

$\alpha < \beta$

β init vide.

init charge.



$$\Omega_s = \frac{\omega}{p}$$

$$n = \frac{f}{p}$$

$$\boxed{H = \frac{3}{2} H_m \cos\left(\frac{\omega}{p} t - \theta\right)}$$

paire de pôle

$$g = \frac{\Omega_s - \Omega}{\Omega_s} = \frac{\omega - p\Omega}{\omega} \qquad \boxed{0 \leq g \leq 1}$$

Ω ← vitesse du rotor

Ω_s ← vitesse du champ stator.

$$= \frac{n_s - n}{n_s}$$

si $n_s = n \longrightarrow g = 0 \Rightarrow$ ~~marche~~ machine à vide idéal.

si $n = 0 \longrightarrow g = 1 \Rightarrow$ démarrage.

si $0 < n < n_s \longrightarrow 0 < g < 1 \Rightarrow$ f^{ct} en charge.

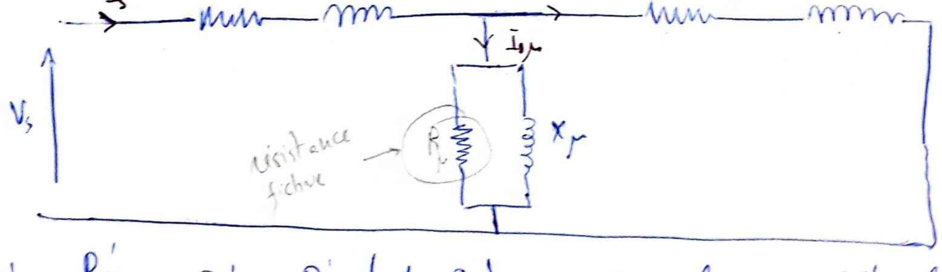
en pratique $1\% < g < 10\%$

$\Omega_s - \Omega = g\,\Omega_s \Rightarrow$ la pulsat° des courant rotorique.

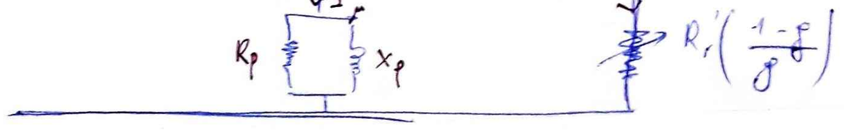
$$\boxed{g\,\omega_s = \omega_r} \; ?$$

$$\boxed{f_r = g\, f_s}$$

$$\begin{cases} V_s = R_s I_s + j\, l_s \omega_s I_s + j X_\mu I_{1\mu} \\ \frac{R'_r}{g} I'_r + j\, l'_r \omega_s I'_r = j X_\mu I_{1\mu} \\ I_s = I'_r + I_{1\mu} \Rightarrow I_{1\mu} = I_s - I'_r \end{cases}$$



$$\frac{R'_r}{g} = R'_r - R'_r + \frac{R'_r}{g} = R'_r + R'_r\left(\frac{1-g}{g}\right) \; ; \; X_s = l_s \omega_s \qquad X'_r = l'_r \omega_s$$



$R_s = 0,14\,\Omega$

entre deux bornes.

$p_{js} = \frac{3}{2} R_s I_s^2 \quad (Y)$

$p_{js} = \frac{3}{2} R_s I_s^2 = \frac{9}{2} R_s J^2 \quad (\Delta)$