ECE 525: Lecture 6

ORIGIN := 1

CT Data: C600 class, 1200/5   Full ratio: $N_{full} := \dfrac{1200}{5}$ $N_{full} = 240$

CT Excitation Curve   TAPS

$$\text{excitation} := \begin{pmatrix} .001 & 0.09 \\ .04 & 90 \\ .1 & 428 \\ .12 & 520 \\ .14 & 600 \\ .2 & 700 \\ .3 & 780 \\ .4 & 800 \\ 40 & 927 \end{pmatrix} \qquad t := \begin{pmatrix} 240 \\ 200 \\ 180 \\ 160 \\ 120 \\ 100 \\ 80 \\ 60 \\ 40 \\ 20 \end{pmatrix}$$

$$v_t(N2) := \left(\dfrac{N2}{t_1}\right)\cdot \text{excitation}^{\langle 2 \rangle} \qquad\qquad Im_t(N2) := \left(\dfrac{t_1}{N2}\right)\cdot \text{excitation}^{\langle 1 \rangle}$$

$\text{turn} := 1$

$R_{turn} := 0.0024 \dfrac{\text{ohm}}{\text{turn}}$ Full winding: $R_{secondary} := R_{turn} \cdot 240\text{turn}$ $R_{secondary} = 0.58\,\Omega$
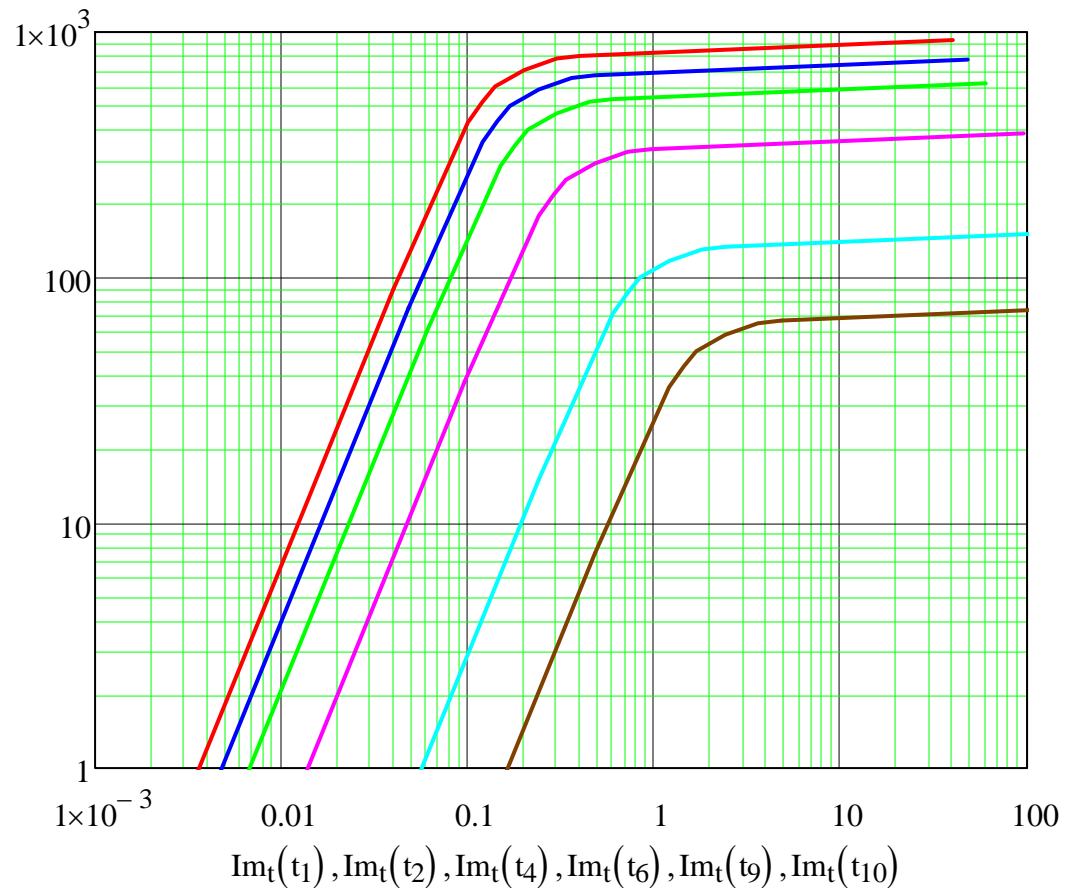
$V_{1200} := 428\text{V}$ at the bottom of the knee of the saturation curve (read from the graph)

$V_{per\_turn} := \dfrac{V_{1200}}{240\text{turn}}$

$V_{per\_turn} = 1.783\,\text{V}$

- Notice that the knee is at 600V for full tap

$v_t(t_1)$

$v_t(t_2)$

$v_t(t_4)$

$v_t(t_6)$

$v_t(t_9)$

$v_t(t_{10})$

$Im_t(t_1), Im_t(t_2), Im_t(t_4), Im_t(t_6), Im_t(t_9), Im_t(t_{10})$

Plot again on a linear scale