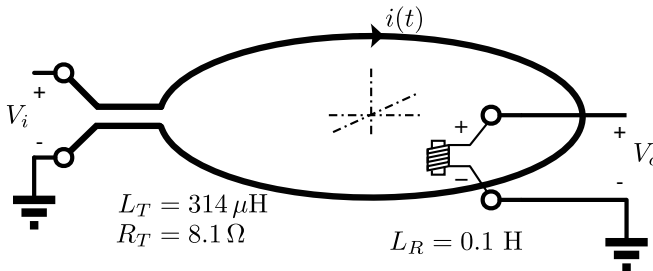


Measurement frequency  $f_m = 1.01 \text{ kHz}$

$$f = \frac{R_T}{2\pi L_T}$$

Receive circuit resonance



At 1.01 kHz the transmit current is determined by the input voltage and the transmit coil resistance, while the receive voltage is determined by the transmit current and the mutual inductance.

$$\left| \frac{V_o}{V_i} \right| = \frac{2\pi f_m k_c}{R_T} \sqrt{L_T L_R}$$

$$k_c = \frac{R_T \left| \frac{V_o}{V_i} \right|}{2\pi f_m \sqrt{L_T L_R}} = \frac{10^{-\frac{53.7}{20}} \cdot 8.1}{2\pi 1010 \sqrt{0.1 \cdot 0.000314}} = 0.00047$$