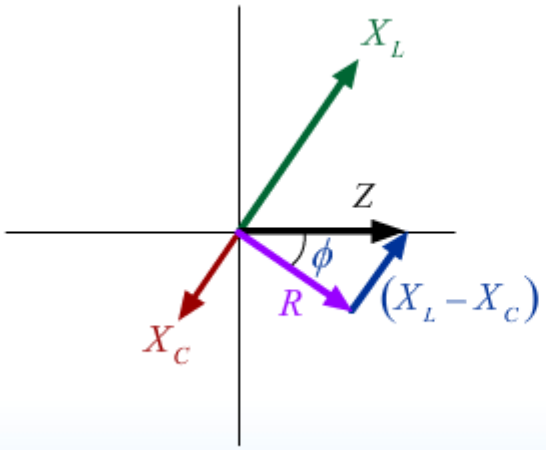
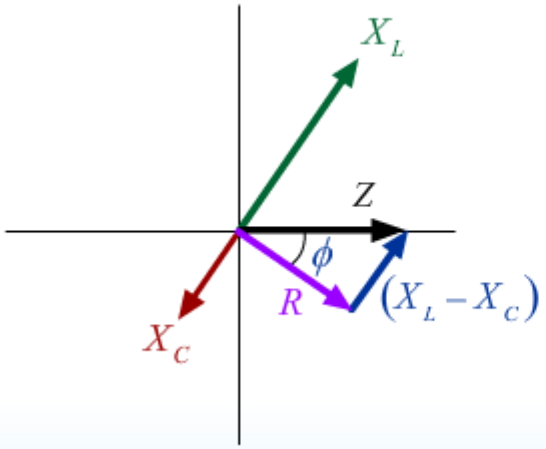
Off Resonance



$$I_m = \frac{\mathcal{E}_m}{Z}$$

$$I_m = \frac{\mathcal{E}_m}{R} \frac{R}{\underbrace{\sqrt{R^2 + (\omega L - 1/\omega C)^2}}_{Z}}$$



$$x \equiv \frac{\omega}{\omega_o} \qquad Q^2 \equiv \frac{L}{R^2 C} \rightarrow \qquad Q \equiv 2\pi \frac{U_{\max}}{\Delta U}$$

$$I_m = \frac{\mathcal{E}_m}{R} \frac{1}{\sqrt{1 + Q^2 \frac{(x^2 - 1)^2}{x^2}}}$$

U_{max} = max energy stored
ΔU = energy dissipated in one cycle at resonance