

LARC Useful Formulas

$$E=I \times R \quad R=E/I \quad I=E/R \quad P=E \times I \quad P=E^2/R \quad P=I^2 \times R$$

$$VL = L \, di/dt \quad L = \frac{\mu N^2 A}{l} \quad W = .5 I_i^2 \quad \omega = 2\pi f$$

$$V_R = E(1 - e^{-Rt/L}) \quad V_L = Ee^{-Rt/L} \quad T_{CL} = \frac{L}{R} \quad T_{CC} = RC$$

$$Q_C = I^2 X_C = \frac{V^2}{X_C} \quad F_C = \frac{1}{2\pi RC} \quad f_C = \frac{R}{2\pi L}$$

$$Z_T = \frac{1}{Y_T} = \frac{1}{Y_1 + Y_2 + \dots + Y_n} \quad Z_T = \frac{Z_1 \times Z_2}{Z_1 + Z_2} \quad I_X = \frac{Y_X}{Y_T} I \quad I_X = \frac{Z_T}{Z_X} I$$

$$Z_T = \frac{R}{1 + j\omega RC} \quad X_C = \frac{1}{2\pi f C} \quad X_L = 2\pi f L \quad Q = \frac{Q}{P} = \frac{X_L}{R} = \frac{V_X}{E}$$

$$f = \frac{1}{2\pi \sqrt{LC}} \quad Z_T = \sqrt{R^2 + \left(\frac{(2\pi f)^2 LC - 1}{2\pi f C} \right)^2} \quad BW = \frac{F_R}{Q} = f_{HIGH} - f_{LOW}$$

$$L = \frac{\left(\frac{1}{2\pi f} \right)^2}{C} \quad C = \frac{\left(\frac{1}{2\pi f} \right)^2}{L} \quad f = \frac{1}{2\pi \sqrt{LC}} \sqrt{1 - \frac{R_{coil}^2 C}{L}}$$

and the ever useful in mixed company: $E = MC^2$