Home Work PHY 554 #14 **Due April 22nd , 2020**

HW 1 (5 points)

Use the following identity

$$\sum_{p=-\infty}^{\infty} \delta(x-p) = \sum_{l=-\infty}^{\infty} e^{i2\pi lx} \ ,$$

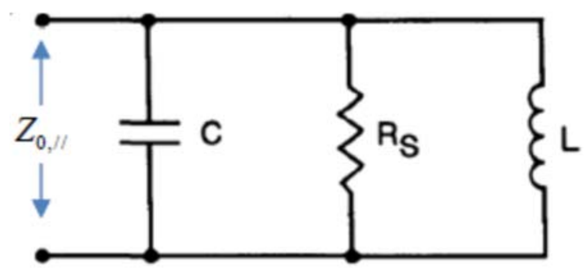
to prove Poisson summation formula:

$$\sum_{l=-\infty}^{\infty} F(lC) = \frac{1}{C} \sum_{p=-\infty}^{\infty} \tilde{F}\left(\frac{2\pi p}{C}\right),$$

where $F(z)$ and $\tilde{F}(k)$ are Fourier pairs related by

$$F(z) = \frac{1}{2\pi} \int_{-\infty}^{\infty} e^{ikz} \tilde{F}(k)\, dk \, .$$

HW 2 (5 points)



Show the impedance of above circuit can be expressed as

$$Z_{0,//} = \frac{R_s}{1 + iQ\left(\frac{\omega_R}{\omega} - \frac{\omega}{\omega_R}\right)} \ ,$$

and find the expression for Q and ω_R in terms of C, R_s, and L.