Appendix D

Network outline

This appendix gives, in tabular form, the impedances of a resistor, coil and capacitor. These results are being used in Chapter 3 (Seismic Instrumentation).

Table of impedances

	Time	Frequency	Impedance
Resistor	$u = Ri$	$U = RI$	$Z_R = \frac{U}{I} = R$
Coil	$u = L\frac{di}{dt}$	$U = Lj\omega I$	$Z_L = \frac{U}{I} = j\omega L$
Capacitor	$i = C\frac{du}{dt}$	$I = Cj\omega U$	$Z_C = \frac{U}{I} = \frac{1}{j\omega C}$

Time-domain symbols: time t, voltage $u(t)$, current $i(t)$

Fourier-domain symbols: angular frequency $\omega(= 2\pi f)$, imaginary unit j, voltage $U(\omega)$, current $I(\omega)$

Impedances: resistance R, impedance Z, capacitance C, inductance L.

	Resistances	Impedances
In parallel	$\frac{1}{R_{TOT}} = \frac{1}{R_1} + \frac{1}{R_2}$	$\frac{1}{Z_{TOT}} = \frac{1}{Z_1} + \frac{1}{Z_2}$
In series	$R_{TOT} = R_1 + R_2$	$Z_{TOT} = Z_1 + Z_2$