Piezoelectric Sensor

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This code was developed by Miodrag Bolic for the book PERVASIVE CARDIAC AND RESPIRATORY MONITORING DEVICES

Moens-Korteweg Equation

Compute the compliance of the carotid artery for two groups reported by [Lin99]:

Normal subjects: h=1.22 mm and E=2.34·10^5 N/m^2

Patients with coronary (and carotid) artery disease (CAD) have increased wall thickness and Young modulus of elasticity: h=1.98 mm and E=4.18·10^5 N/m^2

Estimate the compliance for both groups as well as the pulse wave velocity. Assume that r=4 mm and that μ=0.45.

```
r = 4e-3;
h = [1.9e-3, 1.22e-3];
E = [4.18e5, 2.34e5];
rho = 1.05e3;
mu = 0.45;
for i=1:length(E)
    PWV = sqrt(h(i)*E(i)/(2*rho*r))
    PWV_m = sqrt(h(i)*E(i)/(2*rho*r*(1-mu*mu)))
    C=2*pi*r^3/(h(i)*E(i))
end
```

```
PWV = 9.7236
PWV_m = 10.8883
C = 5.0633e-10
PWV = 5.8297
PWV_m = 6.5280
C = 1.4086e-09
```