1 Helmholz resonator

From http://de.wikipedia.org/wiki/Helmholtz-Resonator:

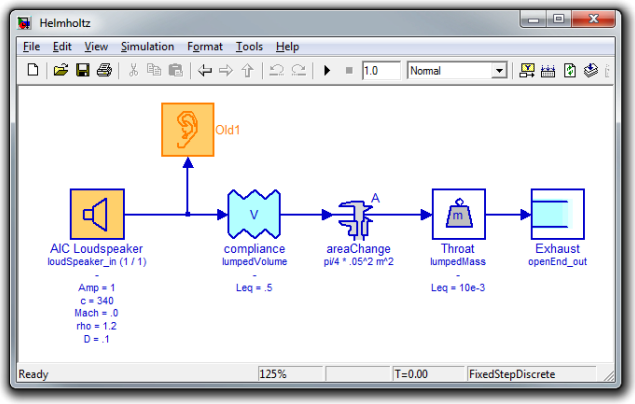
$$f_0 = \frac{c}{2\pi}\sqrt{\frac{S_0}{V_0 L}}$$

Where:

- Speed of sound $c = 340\,{}^{m}/_{\mathrm{s}}$
- Volume $V_0 = \frac{\pi}{4}\,0.1^2\,0.5\,\mathrm{m}^3$
- Throat cross-sectional area $S_0 = \frac{\pi}{4}\,0.05^2\,\mathrm{m}^2$
- Throat length $L = 0.01\,\mathrm{m}$

$$\begin{aligned} f_0 &= \frac{340}{2\pi}\sqrt{\frac{\frac{\pi}{4}\,0.05^2}{\frac{\pi}{4}\,0.1^2\,0.5\,0.01}} \\ &= 382.6344343667701\,\mathrm{Hz} \end{aligned}$$

According to taX:




```
Approximate Solution found with Det(S) = 6.7e-020.
Eigenvalues:
Angular frequency:   2404 + i 1.334e-012 [rad/s]
Frequency:            382.6 [Hz]
Growth rate:           -0.000
```

Q.E.D. ■