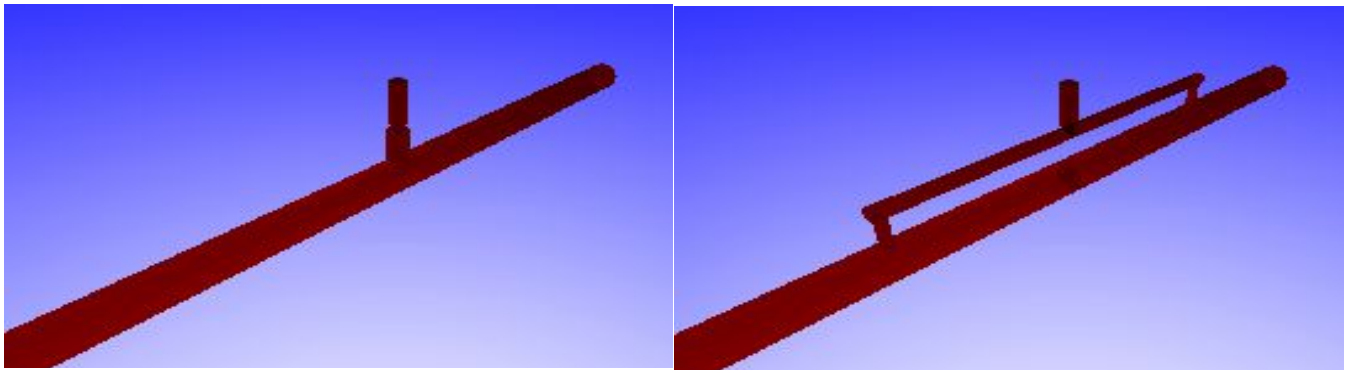
Conductance studies in compartmented targets



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Basic concepts

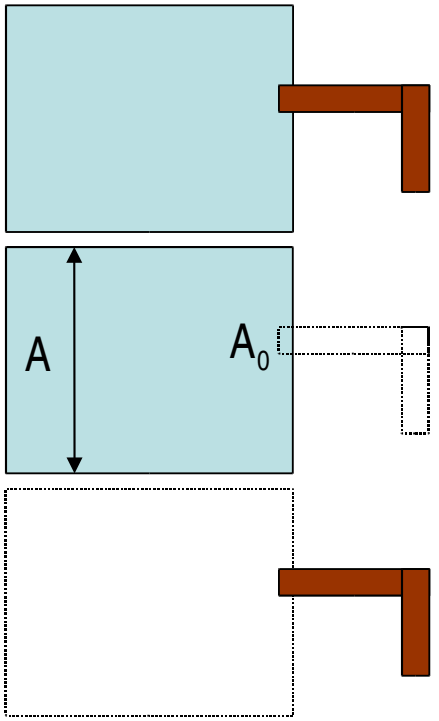
- Conductance C: $$C = \frac{Q}{\Delta p}$$

- Conductance series tank + pipe

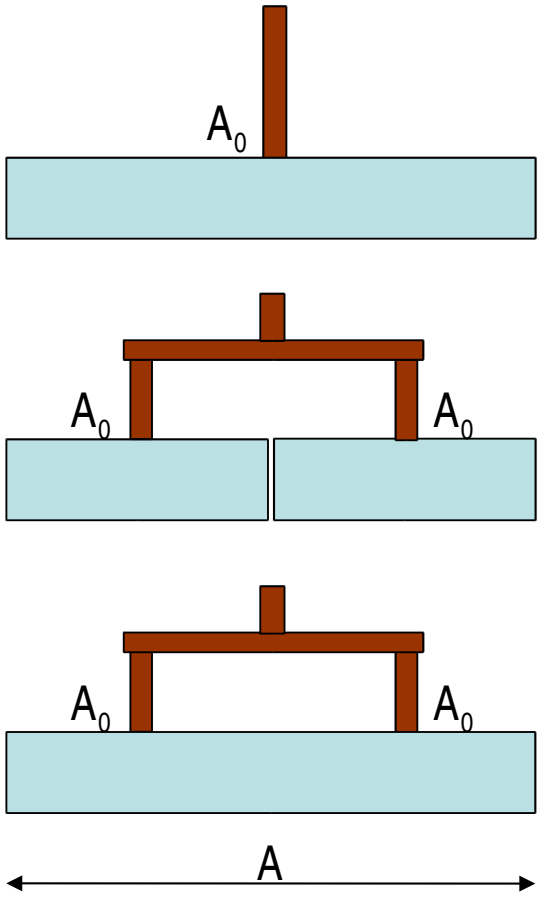
$$\frac{1}{C} = \frac{1}{C_0} + \frac{1}{C_{pipe}}$$

$$C_0 = \sqrt{\frac{kT}{2m}} \frac{A}{A - A_0} \cdot A_0$$

$$C_{pipe} = ?$$



Effusion C0



$$C_0 \propto \frac{A}{A - A_0} \cdot A_0$$

$$C_0 \propto \frac{A/2}{A/2 - A_0} \cdot A_0 + \frac{A/2}{A/2 - A_0} \cdot A_0 = \frac{A/2}{A/2 - A_0} \cdot 2A_0$$

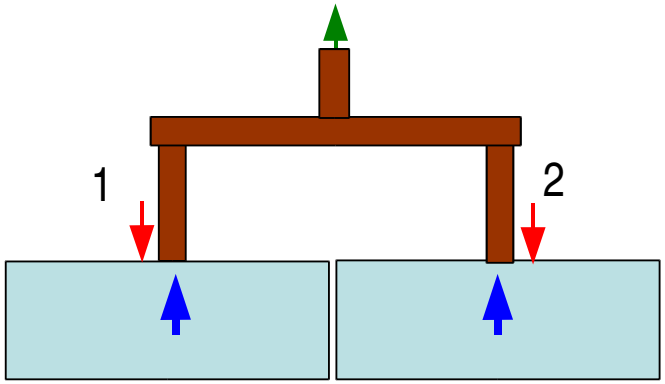
$$C_0 \propto \frac{A}{A - 2A_0} \cdot 2A_0 = \frac{A/2}{A/2 - A_0} \cdot 2A_0$$

Clausing coefficient

- Clausing coefficient P_0:

$$P_0 = \frac{\Phi_{transmitted}}{\Phi_{transmitted} + \Phi_{reflected}} \leftarrow RIBO$$

$$C = P_0 \cdot C_0$$



- Exchange *line 1*<--> *line 2*:
  - Reduced by a barrier.
  - However Po includes also the exchange effect.

Results P0

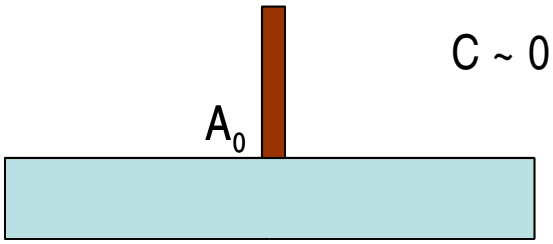
2 lines:

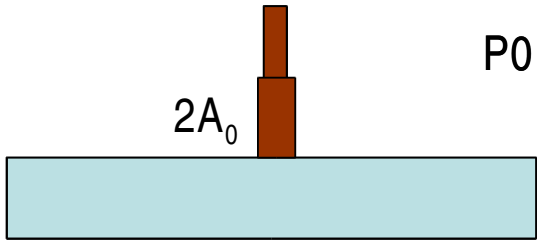
D	0.4	0.6	0.8
h	k | 1<->2	k | 1<->2	k | 1<->2
0	0.0111 | 2E-4	0.0289 | 1.8E-3	0.0478 | 8.4E-3
D/2	0.0104 | 1.5E-4	0.0280 | 2.7E-3	0.0460 | 6.7E-3
3D/2	0.0127 | 1E-4	0.0306 | 1.1E-3	0.0483 | 3.5E-3
2D	0.0112 | 5E-5	0.0272 | 1.1E-3	0.0442 | 3.3E-3

1 line:

P0 = 0.156

C ~ 0.078





P0 =0.10425