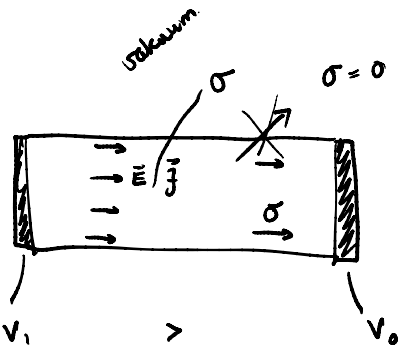
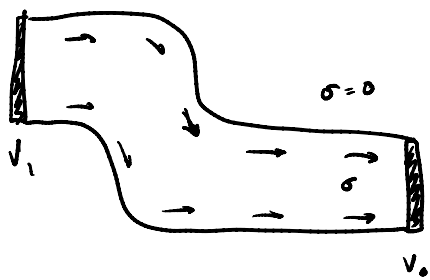
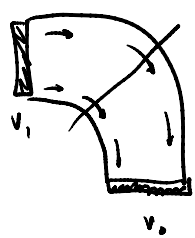
KRETSER

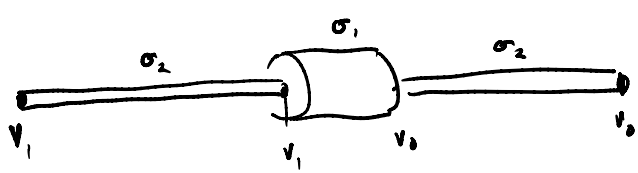
$\vec{j}, \vec{E}$?

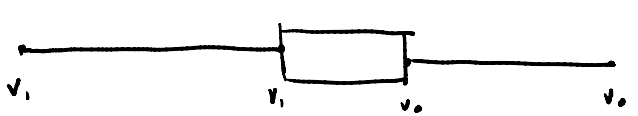


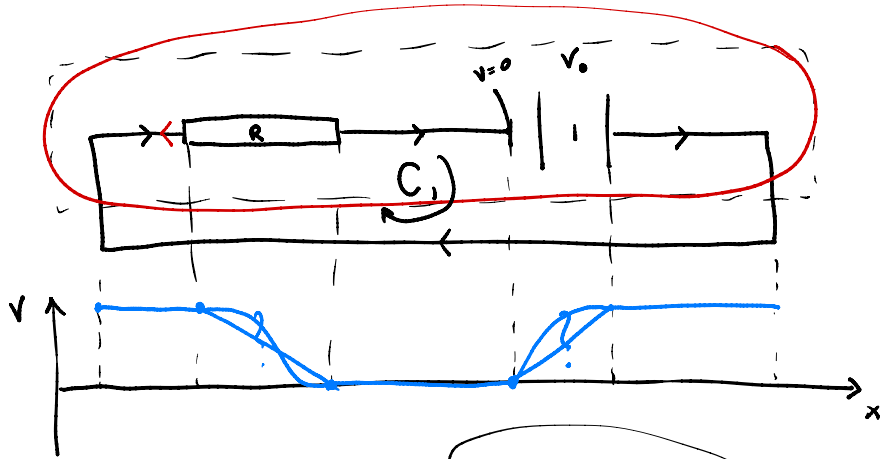


Ingen $\vec{E}$ (eller $\vec{j}$) normal på overflaten.!









Kirchoffs spenningslov (C_1 har en retning!)

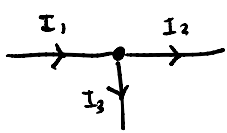
$$\oint_{C_1} \vec{E} \cdot d\vec{l} = 0 \iff \sum_i \Delta V_i = 0$$

: batteriet Ohms lov $\Delta V = IR$

$$V_0 - IR = 0 \iff V_0 = IR \; ; \; I = \frac{V_0}{R}$$

Kirchoff strømlov

$$\sum_i I_i = 0$$



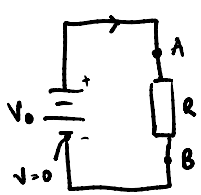
$$I_1 - I_2 - I_3 = 0$$

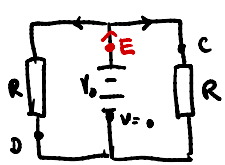
TEST

a) Ranger $I_A, \ldots, I_D$

b) Ranger $V_A, \ldots, V_D$

c) Ranger I_C, I_D, I_E





KRETSER



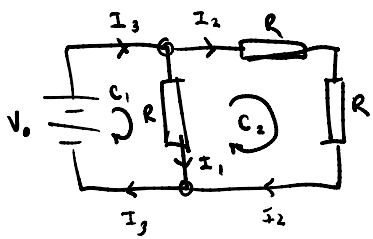
Kirchoffs spenningslov $\sum_j \Delta V_j = 0$

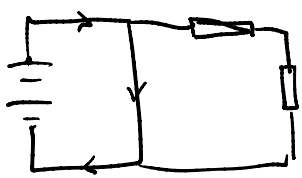
Kirchoffs strømlov $\sum_j I_j = 0$

$I_1 = V_0/R$

C_1: $V_0 - I_1 R = 0$

C_2: $-I_2 R - I_2 R + I_1 R = 0$

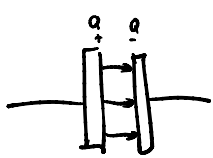


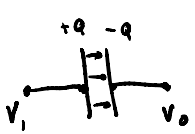


Kondensator

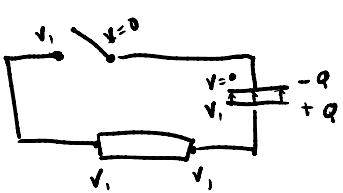
$$C = \frac{Q}{V}$$

$$Q = CV$$

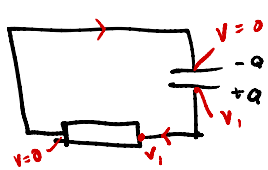




$V_1 = \frac{Q}{C}$



TEST



$t=0$:

$$V_1 - IR = 0 \Rightarrow I(t=0) = \frac{V}{R}$$

$$\frac{Q}{C} - IR = 0 \qquad I = -\frac{dQ}{dt}$$

$$\frac{Q}{C} - R\left(-\frac{dQ}{dt}\right) = 0 = \frac{Q}{C} + R\frac{dQ}{dt} = 0 \Rightarrow \frac{dQ}{dt} = -\frac{1}{RC}Q$$

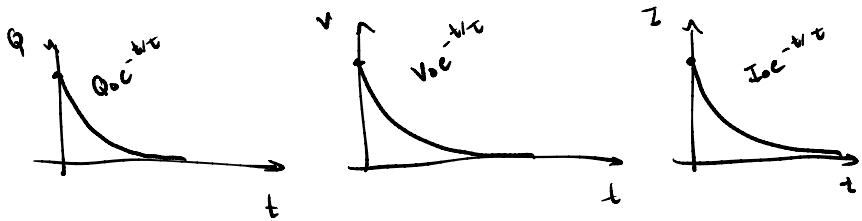
$$\frac{dQ}{dt} = -\underbrace{\frac{1}{RC}}_{\tau} Q \; ; \; Q(t=0) = V_1 C \qquad V_1 = \frac{Q}{C}$$

$$\frac{dQ}{dt} = -\frac{1}{\tau} Q \; ; \; \tau = RC$$

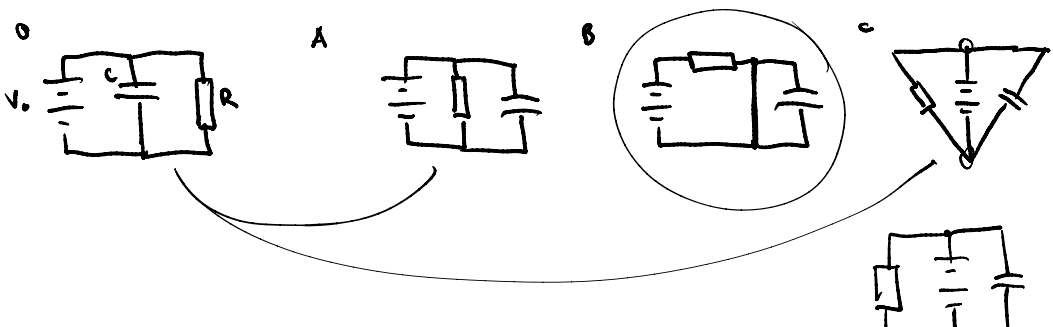
$$Q(t) = Q_0 e^{-t/\tau} \; ; \; \frac{dQ}{dt} = Q_0\left(-\frac{1}{\tau}\right)e^{-t/\tau} = -\frac{1}{\tau}Q$$

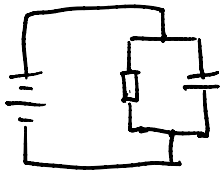
$Q = VC$

$$\frac{d}{dt}(V\cancel{C}) = -\frac{1}{\tau}V\cancel{C} \; ; \; \frac{dV}{dt} = -\frac{1}{\tau}V$$

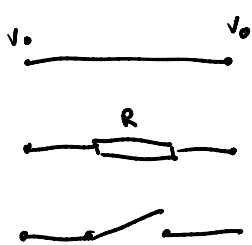


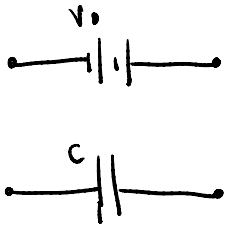
TEST





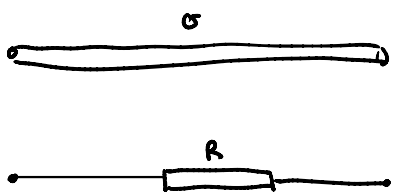
Komponenter



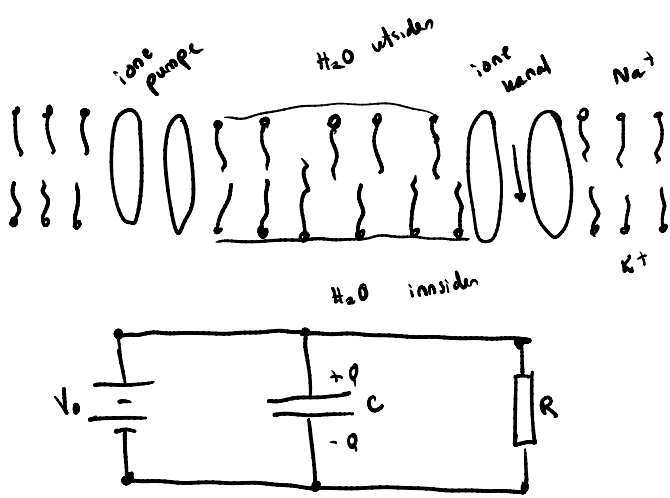


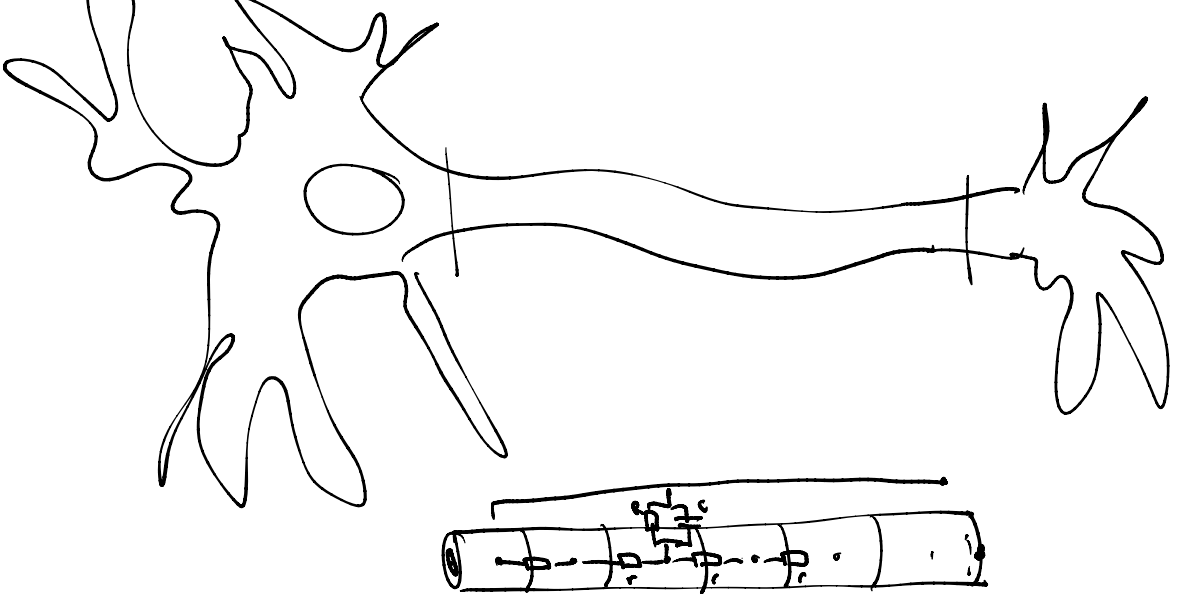


Modeller



Cellemembran




a
c