

task_I9hubowt6x00b2h5_with_calculation

Student Group

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current, charge, chapter1 4

Exercise E20 Determining the Current from Charge per Time

Two objects in an experiment have charge increase over time and the figure below shows the results in the charge per time.

Result



Start drawing by clicking here.



Start drawing by clicking here

A non-linear charge increase leads to a non-constant current.

For a non-constant current, one has to use the time derivative of the charge Q to get the current I .

So, the formula $I = \frac{dQ}{dt}$ has to be used instead of $I =$

.. Determine the currents I_1 and I_2 for the two objects from the Q - t -diagram

figure 1 and plot the currents into a new diagram.

Solution

- Have a look how much increase ΔQ per time duration Δt is there for each object.
- For this choose a distinct time period, e.g. between 0 s and 20 s .
- The current is then given as the change in charge per time: $I = \frac{\Delta Q}{\Delta t}$

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