

Case study - analysis

1. The first step in the analysis is to identify the key elements of the case study. This includes the background information, the research objectives, the methodology used, and the findings of the study.

2. The next step is to evaluate the quality of the research.

This involves assessing the reliability and validity of the data, the appropriateness of the methodology, and the clarity of the findings.

3. The final step is to synthesize the findings and draw conclusions. This involves comparing the results of the study to existing research and identifying any gaps or areas for further research.

4. The analysis should also consider the limitations of the study and the implications of the findings. This includes identifying any biases or limitations in the methodology and discussing the potential impact of the findings on the field of study.

Electrostatics

→ time independent ρ

$$\nabla \cdot \vec{E} = \frac{\rho}{\epsilon_0}$$

$$\nabla \times \vec{E} = 0$$

$$\frac{1}{|\vec{x} - \vec{x}'|^3}$$

$$4\pi\epsilon_0$$

$\rho(\vec{x})$ charge density

$$\rho(\vec{x}) = q \delta(\vec{x} - \vec{x}_1)$$

Dirac delta function

for point charge at $\vec{x} = \vec{x}_1$

$$\frac{1}{|\vec{x} - \vec{x}'|^3} = -\nabla \cdot \frac{1}{|\vec{x} - \vec{x}'|^2}$$

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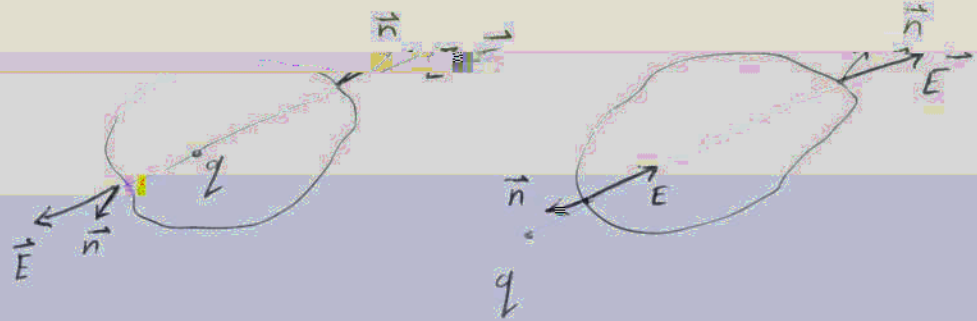
Axiomatische Divergenztheorem

$$\int_S \vec{F} \cdot \vec{n} da = \int_V \nabla \cdot \vec{F} d^3x$$

$$\nabla \cdot \vec{F} = \frac{1}{\epsilon_0} \rho$$

Gauss'sches Gesetz $\int_S \vec{E} \cdot \vec{n} da = \frac{1}{\epsilon_0} \int_V \rho(\vec{x}') d^3x'$

$$a \perp L \Rightarrow \frac{d\Omega}{r^2}$$



$$\vec{E} \cdot \vec{n} da = \frac{q}{4\pi\epsilon_0} \frac{\cos\theta}{r^2} da = \frac{q}{4\pi\epsilon_0} d\Omega$$

erg... $\vec{E}(\vec{x}) = \frac{1}{4\pi\epsilon_0} \nabla \int \frac{\rho(\vec{x}')}{|\vec{x} - \vec{x}'|} d^3x'$

so $\Phi(\vec{x}) = \frac{1}{4\pi\epsilon_0} \int \frac{\rho(\vec{x}')}{|\vec{x} - \vec{x}'|} d^3x'$

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