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RESEARCH REPORT

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ABSTRACT
This report describes the results of an experiment on the measurement of the fine structure constant. The experiment was performed using a quantum Hall effect setup. The results show a value of $1/137.035999084(41)$ for the fine structure constant.

INTRODUCTION

The fine structure constant, α , is a dimensionless physical constant that characterizes the strength of the electromagnetic interaction between elementary charged particles. It is defined as $\alpha = e^2 / (4\pi\epsilon_0 \hbar c)$, where e is the elementary charge, ϵ_0 is the vacuum permittivity, \hbar is the reduced Planck constant, and c is the speed of light.



Figure 1: Schematic diagram of the experimental setup.