GIREP-EPEC
Transforming physics learning via Research & Practice
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Smartphone-Based Physics Experiments: Evaluating the Accuracy and Precision of Embedded Sensors

Monday 30 June 2025 16:30 (1 hour)

This study investigates the suitability of smartphone sensors for physics experiments by comparing their performance with laboratory-grade instruments. Measurements from various smartphone models were analysed across experiments involving sensors like accelerometers, magnetometers, and light sensors. Results of light sensor measurements reveal significant variability, particularly at high illuminance levels, with uncertainties necessitating careful interpretation. Despite other limitations such as lower sampling rates and sensitivity to orientation, smartphone sensors offer a cost-effective, accessible tool for hands-on learning, empowering students in resource-constrained environments to engage in meaningful scientific inquiry.

Education level

Age 15-18 (Secondary education)

Physics topic

Full curriculum

Research focus

Digital technologies (multimedia, simulations, AR, VR, remote, games)

Research method

Educational design research (Qualitative research)

Organizing preference criteria

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Session Classification: Poster session

Track Classification: Digital technologies (DIGI)