



GIREP-EPEC

Transforming physics learning via Research & Practice
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Type: **Oral presentation**

Enhancing Kinematics Understanding Through a Real-Time Graph-Based Motion Video Game

Tuesday 1 July 2025 09:40 (20 minutes)

Although kinematics concepts are key in high school and university physics courses, students face significant difficulties in understanding them. Research shows that real-time graph visualization can help improve comprehension of these concepts. In this oral presentation, we will describe a project we are currently developing, which involves the creation of a physical-computational video game environment where students replicate motion using their own bodies based on a given graph. A position sensor generates a real-time graph that is compared to the target graph, and students are scored on their accuracy. Preliminary results show improved comprehension and high student motivation.

Education level

Age 15-18 (Secondary education)

Physics topic

Full curriculum

Research focus

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

Research method

Mixed method (qualitative & quantitative)

Organizing preference criteria

Education level

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Session Classification: Parallel oral presentations

Track Classification: Interplay of mathematics and physics (MATH)