

Writing Mobile Apps for Investigative Study of Physics

Assignment: Implementation of Mobile Apps for Investigative Study

Name	Event	Date
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Target group	F.4 Physics students
Objective	To understand the concept of friction compensation, To realize object in motion when net force = 0, To determine the friction of a wooden runway
Mobile Apps	1. Accelerometer app - record values of x-, y-, and z-direction accelerations - record overall acceleration 2. Laser leveler - measure the angle of inclination
Description of how to use the Mobile Apps for investigative study of Physics or Science subjects	- calibrate the mobile phone installed with “Laser Leveler” with a bubble leveler. - set the wooden runway to any inclination. - measure the angle of inclination of the runway at three positions. - switch to “Accelerometer” app, and allow the phone to slide down the runway. - record the values of accelerations - repeat at least 5 times with another inclination - plot a graph of average acceleration against inclination. - determine the value of inclination which friction is compensated. - measure the mass of the mobile phone - determine the friction of the runway <u>Q: Will this value of friction hold for another mobile phone?</u> <u>Q: How can you prove it?</u>
Expected learning outcomes	- able to carry the experiment safely - observe the change of acceleration with inclination - able to extract/interpolate the expected value of inclination without actually measure it.

Expected difficulties	<ul style="list-style-type: none">- unable to directly determine the value of inclination of friction compensation- reading of acceleration is not stable- computation of overall acceleration- concept of acceleration in 3D space- extrapolate information from plotted graph
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