

Interdisciplinary project

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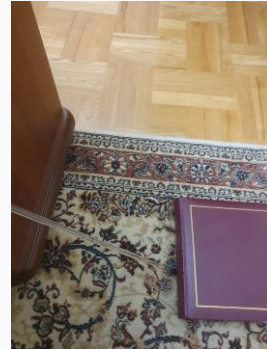
Hypothesis

The hypothesis that I solved was “Does tilt angle affects the velocity”. The experiment which I made was to check if air bubble velocity in the long straight tube depends on the tube tilt angle. I planned to make a graph with measurement uncertainty to show the results and I decided that my product will be a poster.

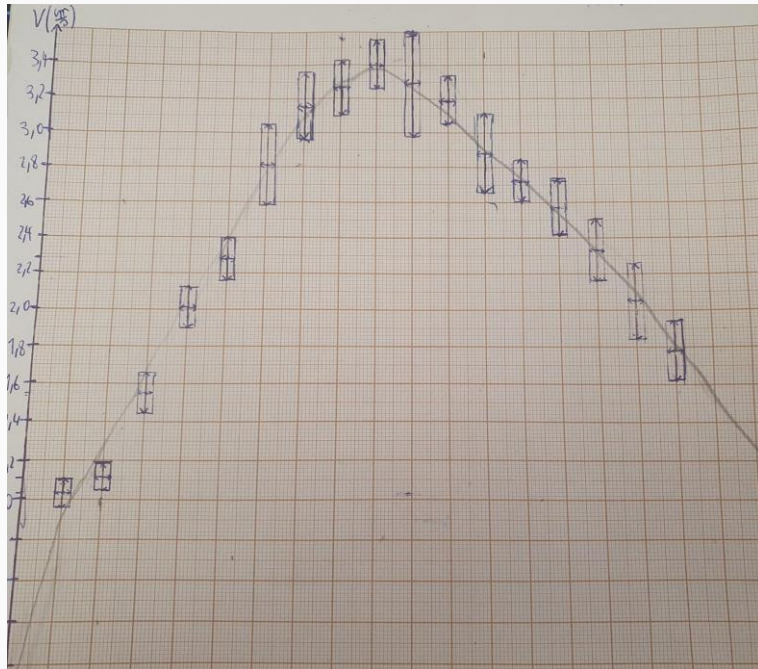


How does the experiment went?

1. I measured the length of the tube and it was 46cm.
2. I built a test station to hold the tube when my hands were full.
3. I used apps on my phone to measure the angle and to measure time.
4. I took 3 measurements of time for every 5° angle from 5° to 85° . I put all the time measurements in to the table and then I calculated the average time.
5. I calculated the velocities and the measurement uncertainty.



Graph



Results of the experiment

Results weren't as obvious as they could be. As we could see the velocity isn't going only up steadily but it is going up when the angle grows, and at one point it stops growing, and then it starts to fall down. The velocity achieved peak when the angle was 45° , so in the middle of the straight angle. I also have to mention that 50° has a big measurement uncertainty so it can be the highest velocity too.

conclusion of the experiment

The angle has a very important impact on the velocity. Setting tube under particular angle starts air bubble movement to the top. The effect of the equilibrating of buoyant force and resistive force is that bubble air moves with uniform linear motion.

bibliography

- Maria Fiałkowska, Barbara Sagnowska, Jadwiga Salach, Fizyka, zakres rozszerzony, WSiP 2019.
- my own knowledge
- https://mfiles.pl/pl/index.php/Czas_reakcji

Thanks for attention