Using Gauss launcher csv data

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1 Graphical Analysis 4 software(tm) by Vernier

Graphical Analysis 4 is a software program that Vernier Co. lets users download and use for free at their website: https://www.vernier.com/product/graphical-analysis-4/

For this project it is useful for:

- reading csv files generated by Vernier sensors (e.g., the ultrasonic motion detector);
- reading peak values from data points.

2 Extracting exit velocities

1. Open the Graphical Analysis program.
2. Under OPEN SAVED FILE, click on CHOOSE FILE.

3. In the lower right corner pulldown menu, click and select "Comma Separated Values."

4. Select a CSV file on your computer. The name of the file represents the number of steel spheres to the right of the magnet. The static configuration from left to right consists of sphere - magnet - N spheres, where N is a number of spheres from 3 to 8 and an ultrasonic motion detector. A sphere is released from rest at a fixed distance on the left side and strikes the single sphere to the left of the magnet. The outermost sphere on the right side of the magnet is ejected. .

5. Click on the "y-axis" plot label, then, under "Columns", click on "Position" and "Velocity" and, under "Data Sets", click on "CSV dataset.

6. You should see two plots displayed. The blue plot represents the velocity of the ejected steel sphere as a function of time, while the red plot represents the position of the ejected steel sphere as a function of time.

7. Using the first large decreasing velocity bump, click on the upside-down peak in the velocity curve and record the peak velocity. (The negative sign means that the ejected sphere was approaching the motion detector and therefore the distance of the sphere to the detector was decreasing). Record this peak velocity as the exit velocity.