



EUROSTRONOMIA 2017-2020

Graph Matching

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Within the framework of the Erasmus+ Project "Eurostronomia" during December 2017 about 10 students worked on experiments and investigated the graphs produced – relate to the equations of motion. Students were first and second year.

One of the most effective methods of describing motion is to plot graphs of position, velocity, and acceleration vs. time. From such a graphical representation, it is possible to determine in what direction an object is going, how fast it is moving, how far it traveled, and whether it is speeding up or slowing down. In this experiment, students used a Motion Detector to determine this information by plotting a real-time graph of their motion as they move across the classroom.

The Motion Detector measures the time it takes for a high-frequency sound pulse to travel from the detector to an object and back. Using this round-trip time and the speed of sound, the interface can determine the distance to the object; that is, its position. It can then use the change in position to calculate the object's velocity and acceleration. All of this information can be displayed in a graph. A qualitative analysis of the graphs of students motion help students to develop an understanding of the concepts of kinematics.

Objectives were:

- To analyze the motion of a student walking across the room.
- To predict, sketch, and test position vs. time kinematics graphs.
- To predict, sketch, and test velocity vs. time kinematics graphs.

To predict and repeat movement we used Logger Pro and some before prepared graphs.

Some of the schedules that students had to analyze, describe and get by moving around the Classroom:

