APPLICATIONS FOR VIRTUAL LABORATORY

Part 2 – Video analyses with Tracker Software

Intellectual Output 2 of Science Connect project,

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Help file

Contents

For opening and running Tracker Software

Note: to see Tracker files, firstly install Tracker software (https://physlets.org/tracker/) then download the file and open it. The download process will start shortly.

If you do not want the installation, there is the possibility to use the software online or to install the Tracker on a USB or other portable drive. The necessary steps can be found in the section Installing and using Tracker on the Home page of Tracker.

The site is well structured and here you can find an Installer Help as well as a short presentation of the software.

An introduction to Tracker can be seen on Tracker Quick Start.

Other tutorials made by the author can be found in the Tracker Video Tutorials section of the Tracker Home page.

Using the Tracker

To run the Tracker, you need a video recording of a movement (in the case of using the software for the study of mechanical phenomena). The recording must be of short duration, although you can select only a portion of a video, the beginning and end frames.

Since the video analysis is performed by comparing frame by frame, for a good accuracy of the results it is recommended that the recording be made with at least 60 frames per second (60fps).

The types of video files that can be used are presented in the Supported Video Formats section of the Tracker Home page.

Note

If you want to use your own video recordings for analysis, some rules must be followed:

- The position of the video camera must be fixed
- The recording includes the visualization of the entire phenomenon in the position chosen for the video camera.
- The ambient brightness should be adequate for the analysed phenomenon, so that it is visible, not blurred.
- Within the moving objects, there should be a background that is as contrasting as possible with them.
- The registered object must have a standard size, which we can find online (example - the diameter of a soccer ball) or a milestone / object must appear in the registration to allow the scaling of the image.

Tracker analyzes for the study of some phenomena, carried out within the Science Connect Project

Each proposal is accessible through a link to a folder that contains the recording/video recordings made and used, the Tracker file (.trk) for the analysis of this movement, as well as a presentation of the pedagogical path to follow for each analysis.

The file must be downloaded and then, with the software installed, double-click on the .trk file, it is automatically loaded. If you are asked for the video file corresponding to the analysis, select the video file from the downloaded folder.

The presentations in each file allow you to understand the way in which the tracker analysis was included in an educational scenario.

Note.

The author of the software makes frequent updates. You may be asked to access and install them. If you don't have a good internet connection, or if you don't want to update, you can run the already installed application.

Links for tracker files with videos and presentations

Ballerina

Horizontal Launch

Horizontal Movement

Pendulum I

Pendulum II

Study of a Bottle Movement

Study of Collision

Vertical Launch and Free Fall

Good luck and we hope you appreciate the proposed analyses!