

# Free Fall Laboratory Experiment with your smartphone

**Purpose:** Studying a free fall with your smartphone

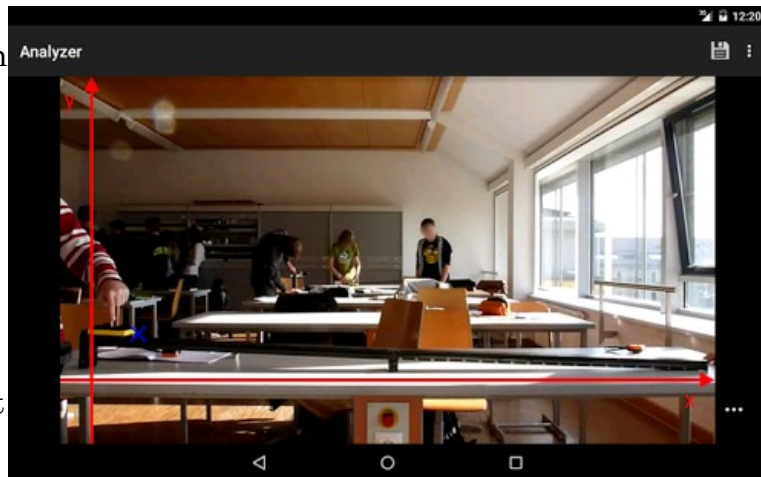
**Requirements:** First of all you need your smartphone. In order to perform this experiment you have to download the free application VidAnalysis free



## Introduction:

Are you tired of having poor measuring instruments in physics lessons? Then this is the right thing for you!

VidAnalysis Free is a multipurpose tool: In this app measurement, physics and the actual math behind it are combined. For example you can film the free fall of a small ball or a pendulum experiment with the camera of your smartphone or tablet. Next



you analyze the video by marking the object you want the motion to be tracked in every frame of the video. With this information the app creates a time-x-distance-, time-y-distance-, x-distance-y-distance-diagram and adds all values to a list. You can also save the values as a CSV file and study the experiment with LibreOffice and your computer. With the free software LibreOffice you can add your own function to the measured values into the diagrams.

**Summarized:** With this app you can

- organize your videos for analysis
- choose measuring points for analysis
- set an absolute length as reference to reality
- set an coordinate system and even rotate it
- correct your chosen points in analysis
- display three diagrams, where you can add an function as a model
- display the list of all measured values
- share and save this list as CSV file

## Doing the Experiment

The falling object is an ordinary ball. With VidAnalysis Free, you have to make a movie of the free fall and to find out the maximum value of the vertical speed.

## The lab report

You have to write the protocol of the experiment and the result of your measurement. At the end of the lab, don't forget a conclusion. This lab report will be on your website.