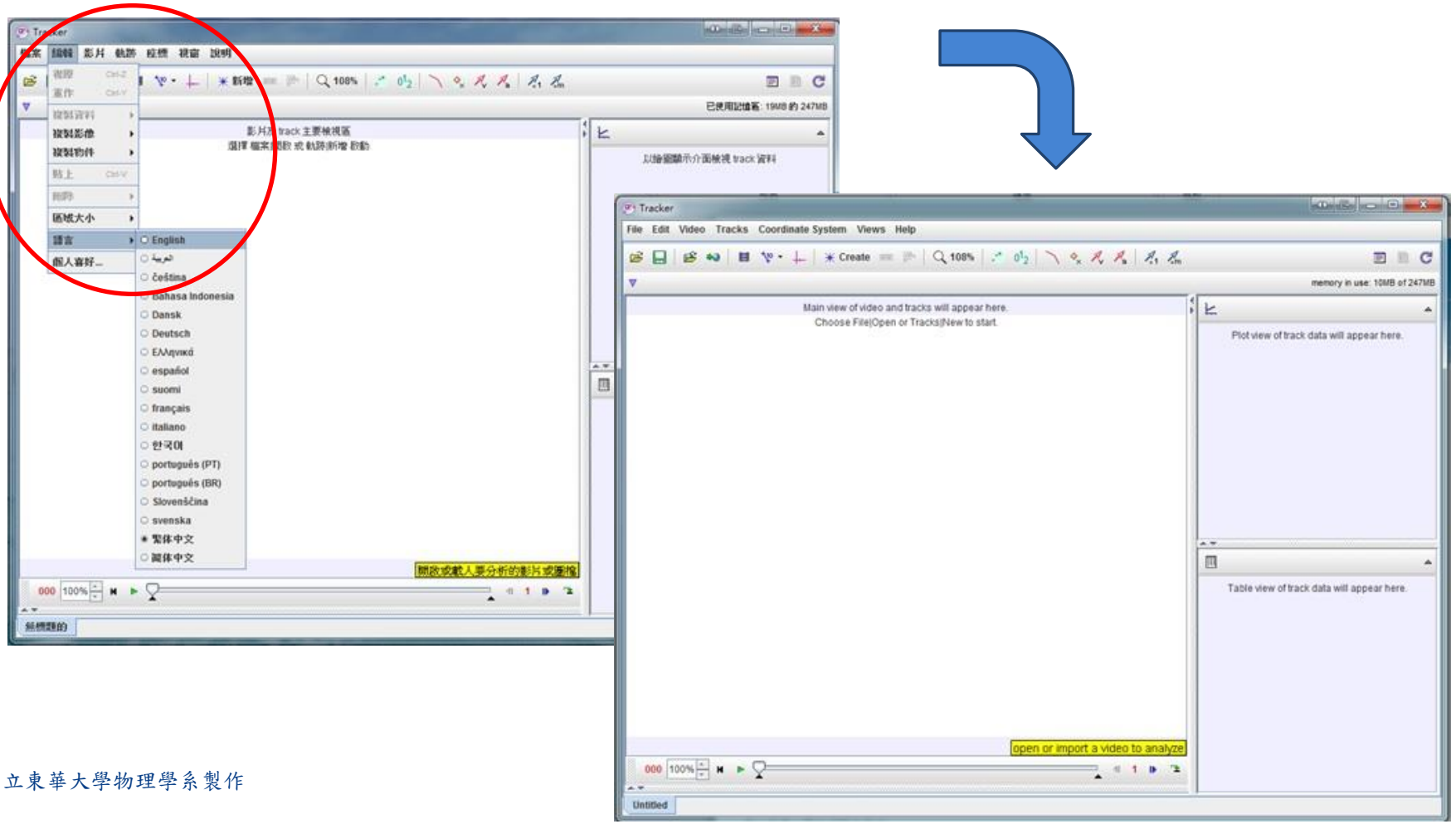
Tracker Software

103年11月 Department of Physics, NDHU

Tracker Software

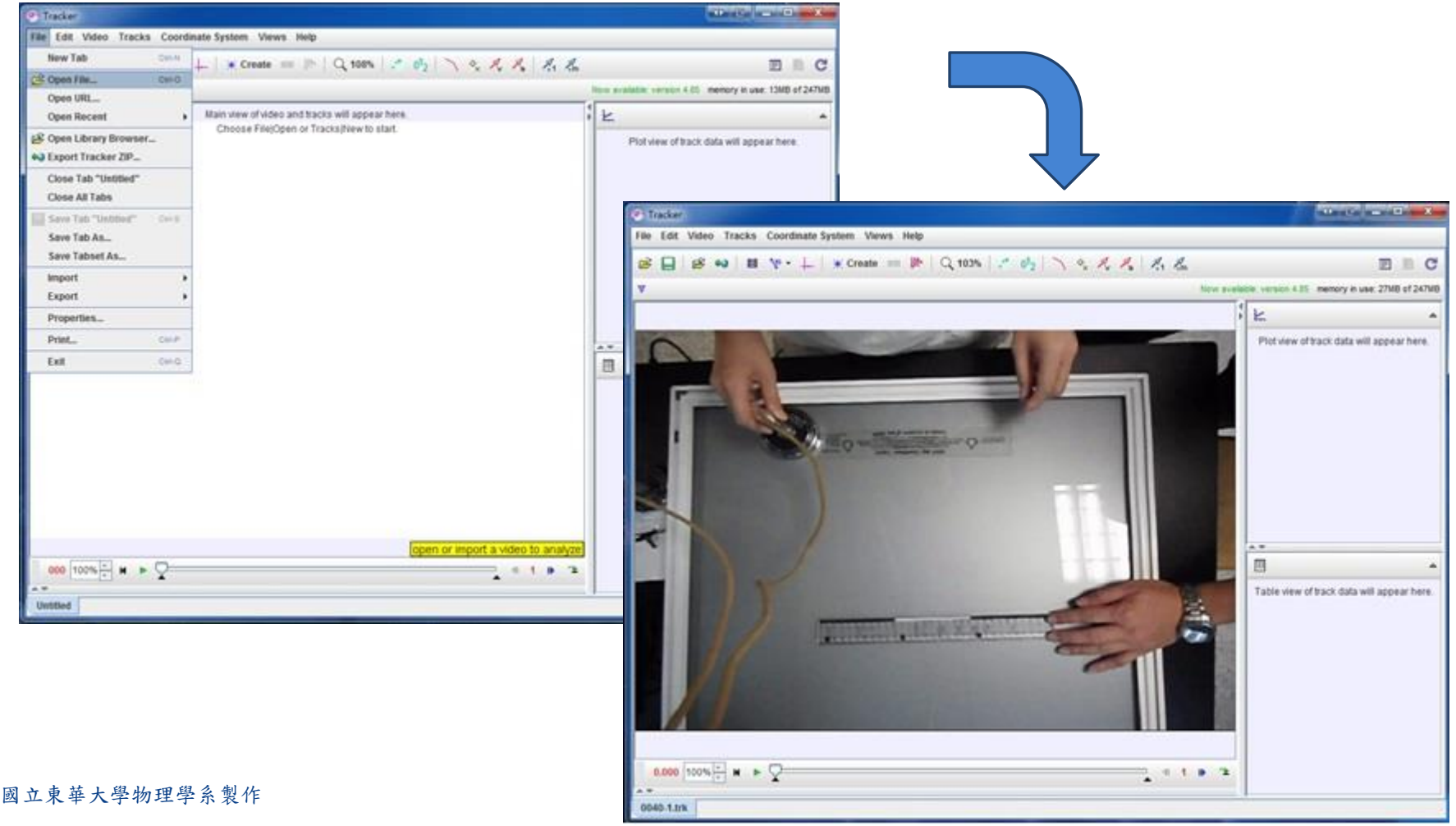
1. Tracker's main user interface。

1.1. Choose Language。【編輯(Edit)→語言(Language)→English】

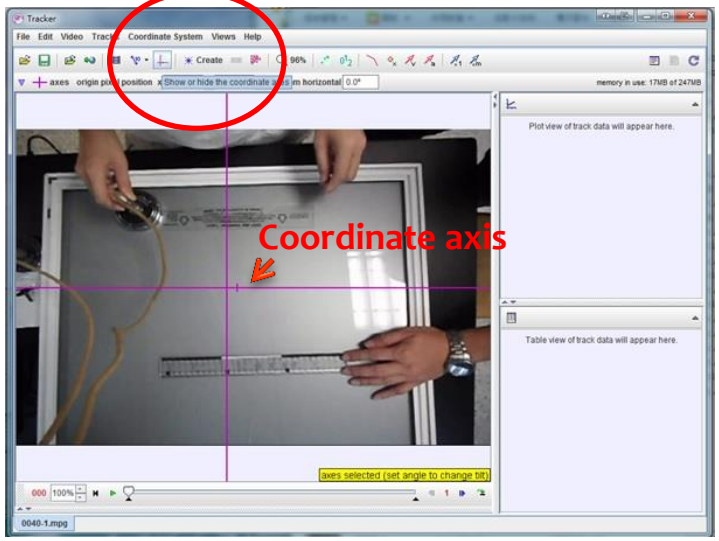


2. Open the files。

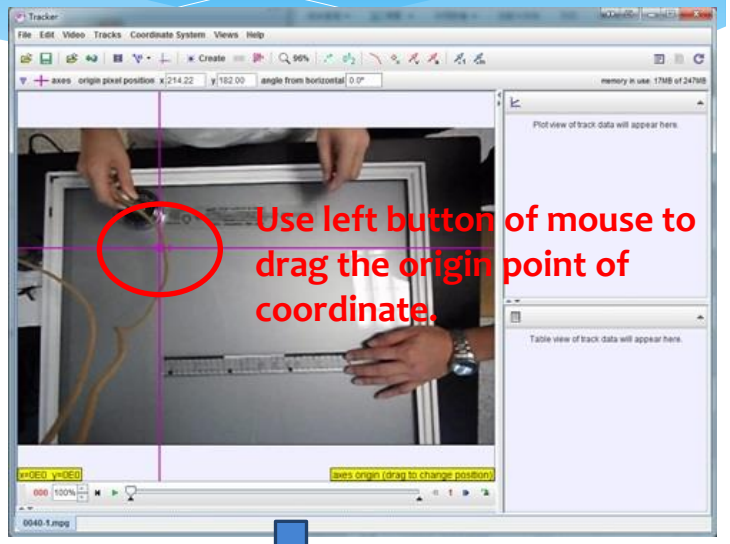
【File→Open File…→Video →Open (or by using your mouse to drag the video into the interface)】



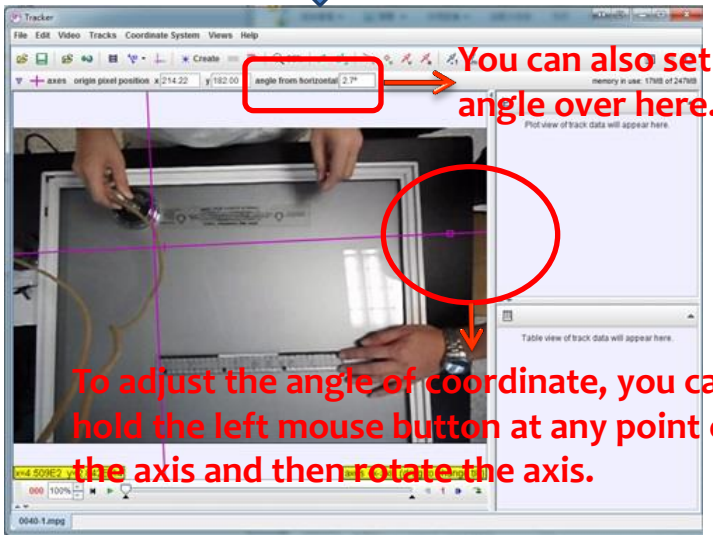
3. Set coordinate 【 ：Coordinate axis setting】



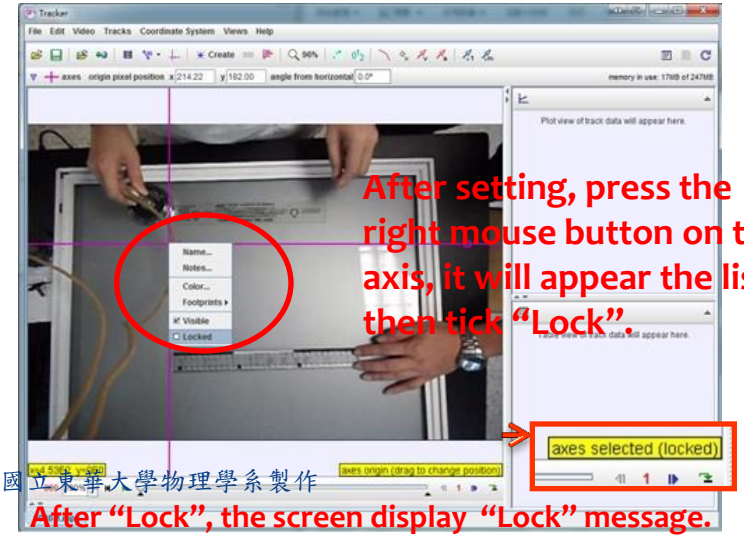
【Origin of coordinate Setting 】



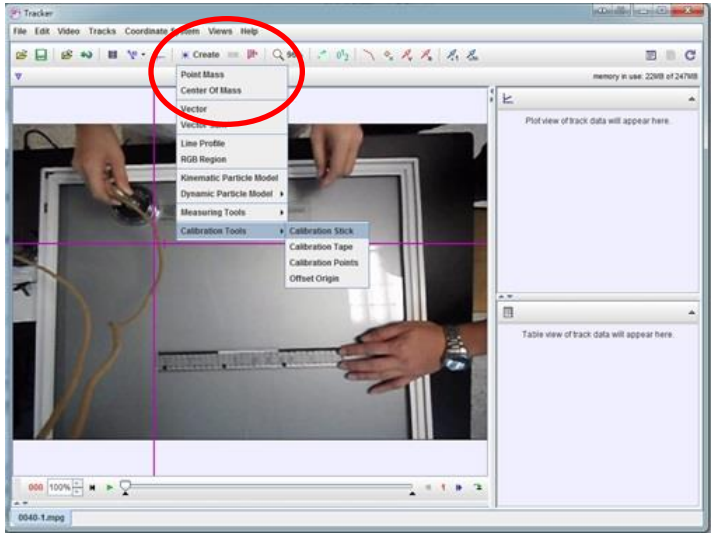
【Tilt setting】

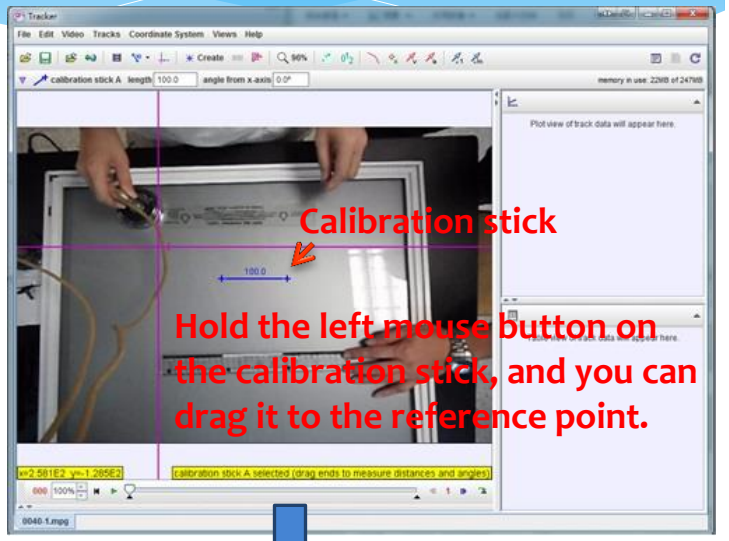


【Lock coordinate setting 】

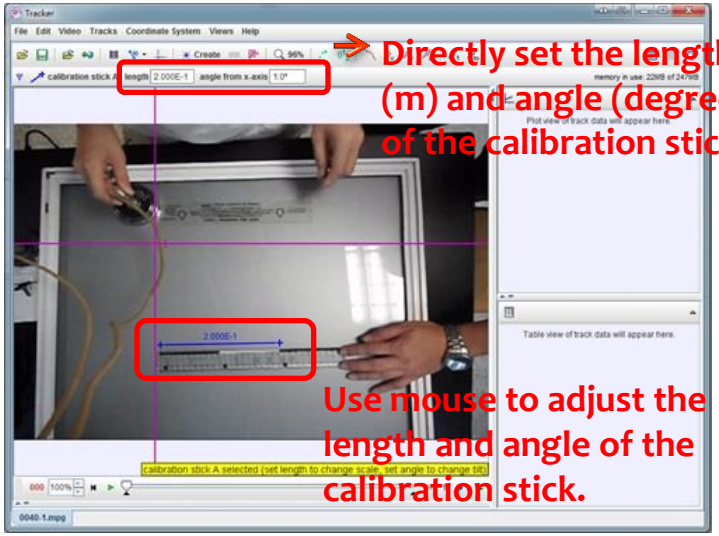


4. Set scale bar。【Toolbar Create → Calibration Tools → Calibration stick】

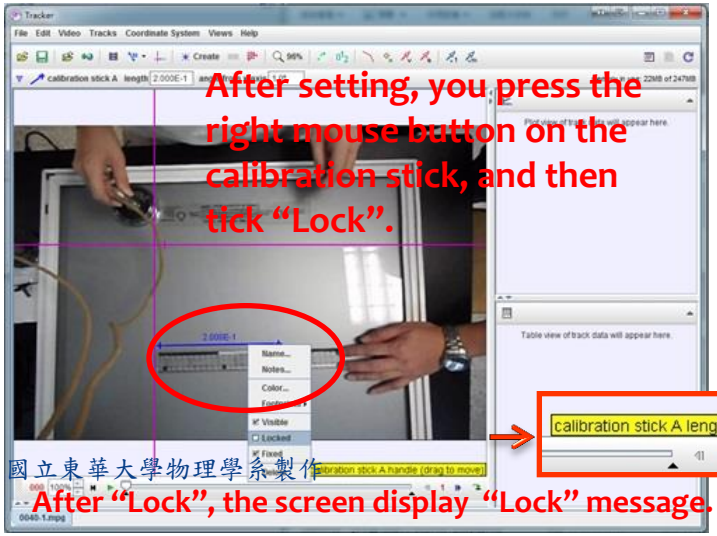




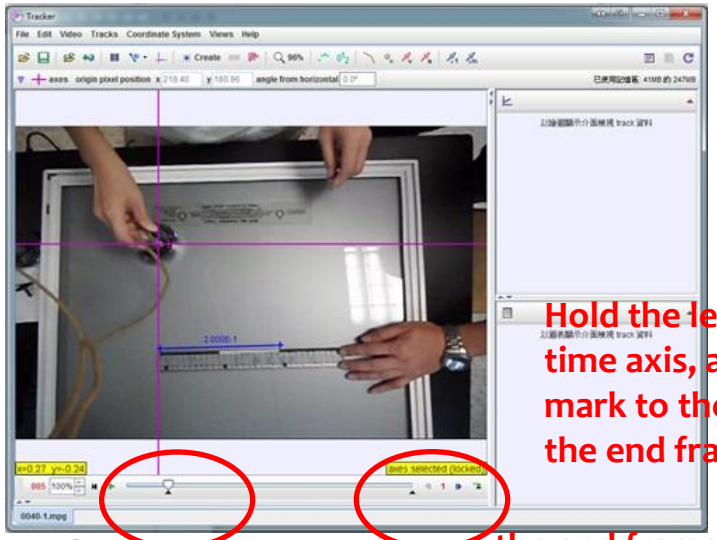
【Length setting】



【Lock setting】



5. Set time axis。

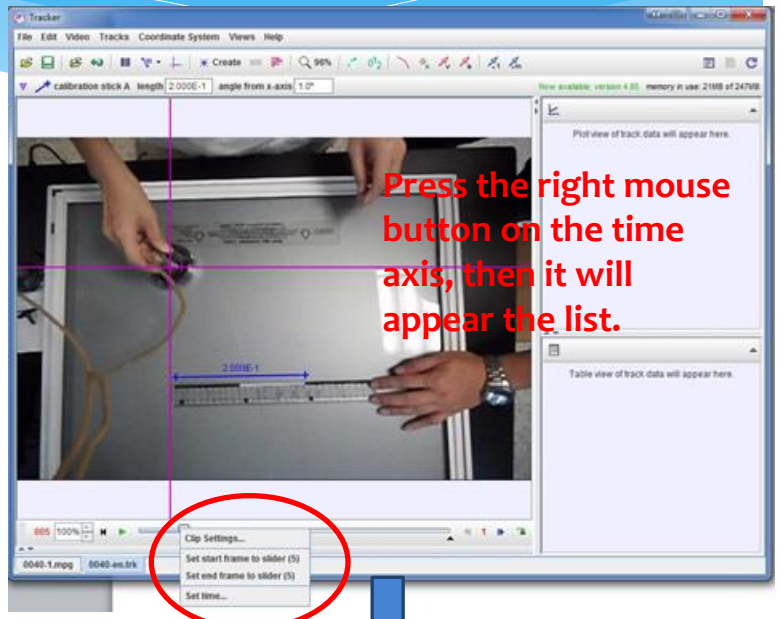


start frame

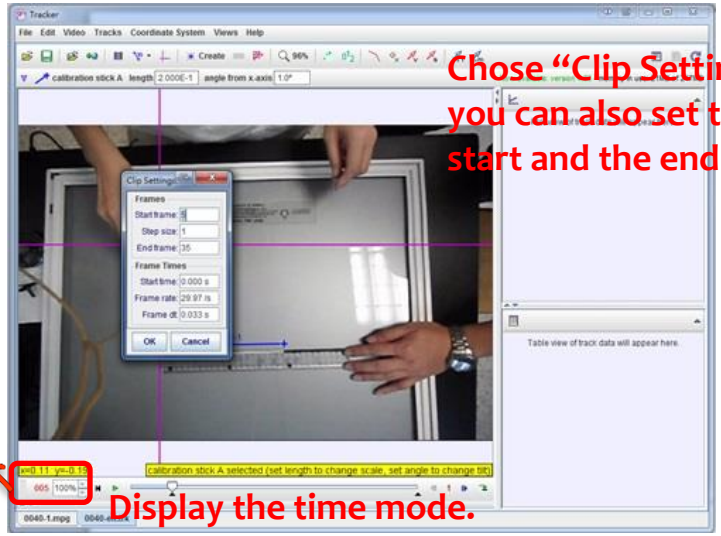
the end frame

Hold the left mouse on the time axis, and drag the mark to the start frame and the end frame.

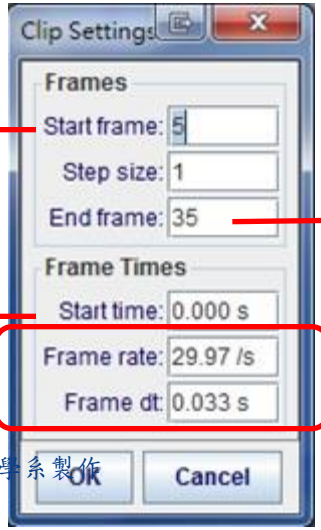
【Time setting】



Press the right mouse button on the time axis, then it will appear the list.



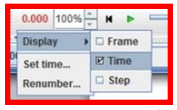
Chose “Clip Setting”, you can also set the start and the end points。



Set start frame

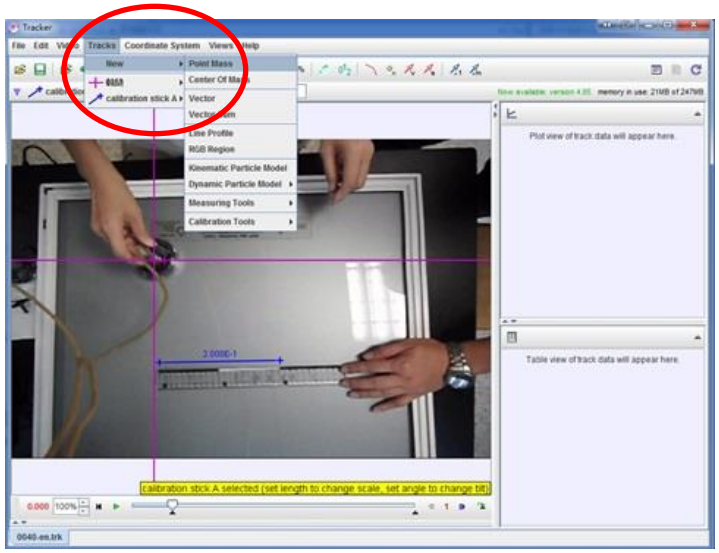
Sett end frame

Don’t change these.
(They are camera’s settings)

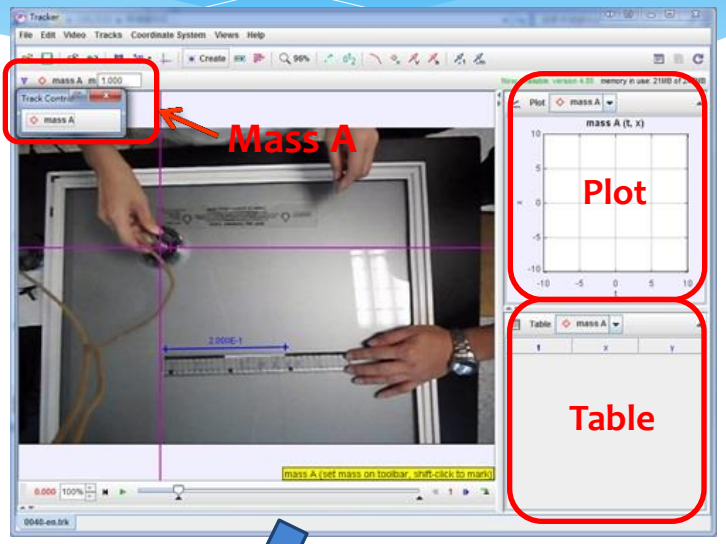


Display the time mode.

6. Track object's trajectories---Point Mass 【Toolbar Tracks→New →Point Mass】



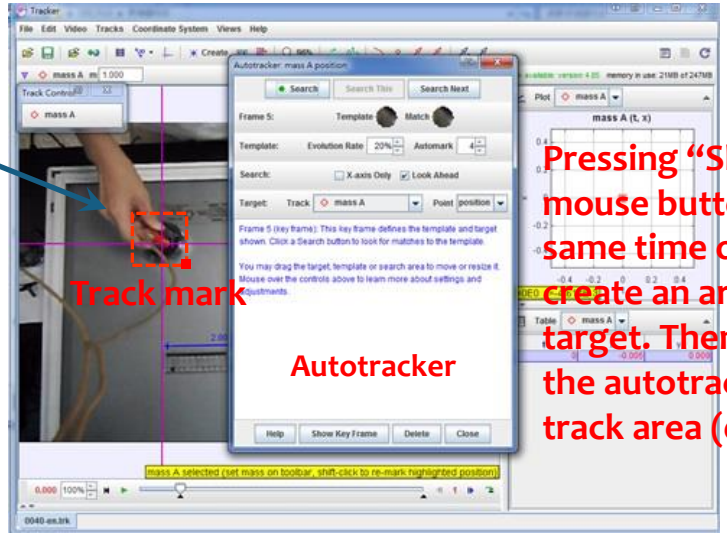
【Point Mass】



【Tracked object】

Drag the lower right square mark to adjust the size and shape of the track area.

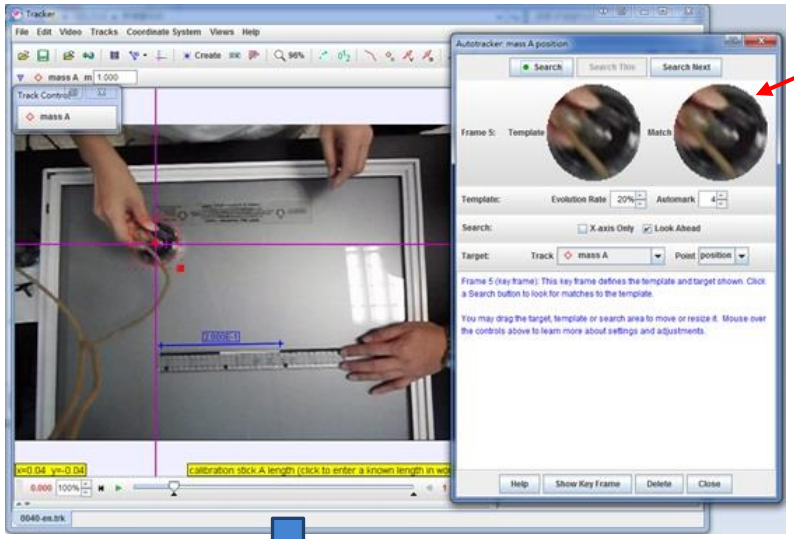
The circular mark identify the "object" that you want to track.



Pressing "Shift+Ctrl+left mouse button " at the same time on Mass A to create an area around the target. Then it will show the autotracker and the track area (dash line).

6.Tracked object trajectories---Point Mass

The "object" that you identify

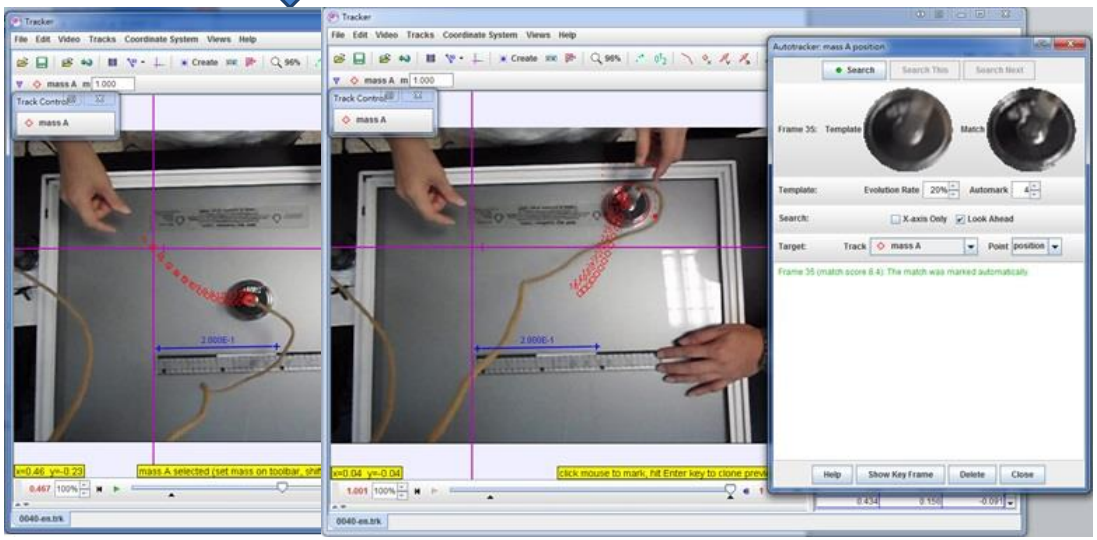


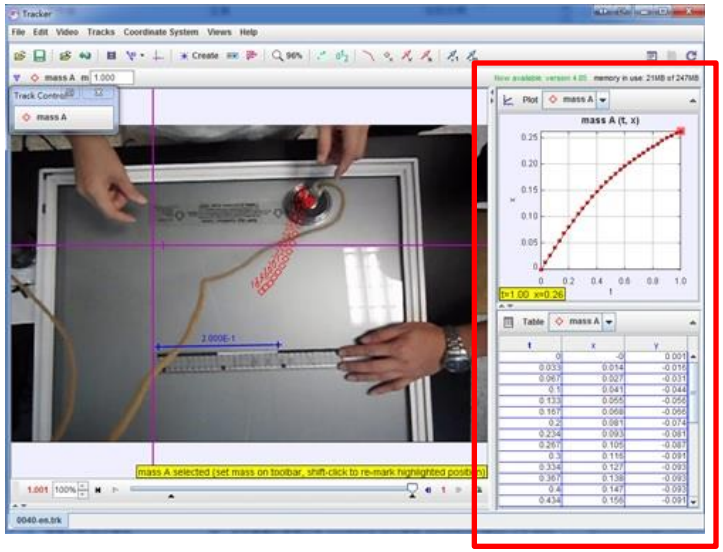
After setting object and track area, press "Search". It will automatically search for the position (x,y) of the object in each frame. The position is also shown on the right chart.

If the identification (auto-track) is error, you can move the position mark (cross) to a correct location. Then choose "Accept" or "Skip".

Make sure all position is correct, and then press "Close".

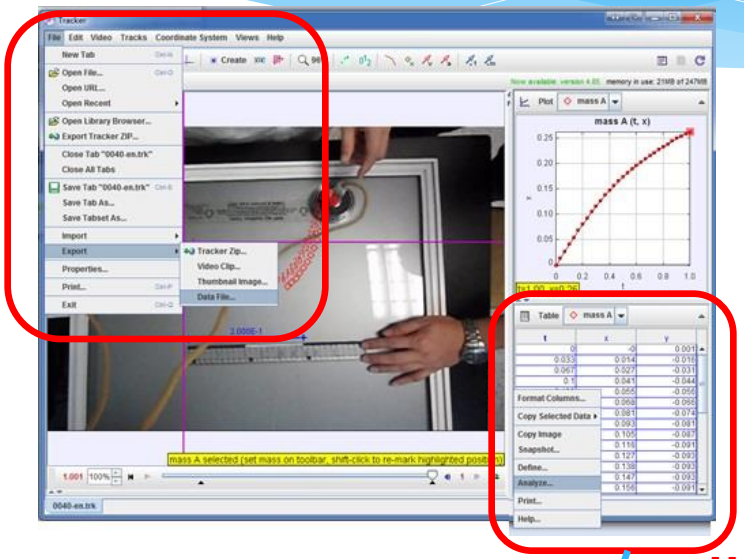
Finally, do data analysis.



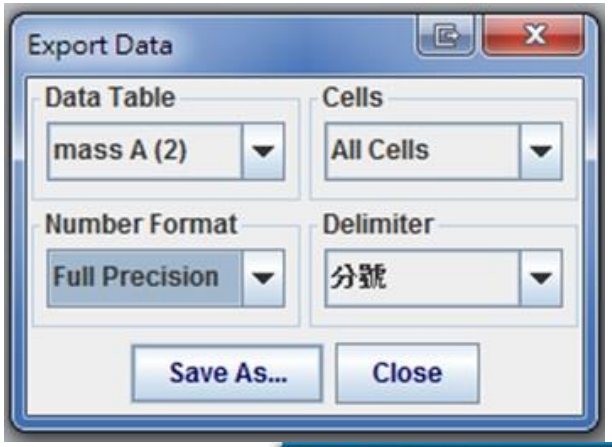


7. Data processing and analysis。

Methods of data analysis :
I. External program (ex：Excel、Origin…)。
II. Internal program。

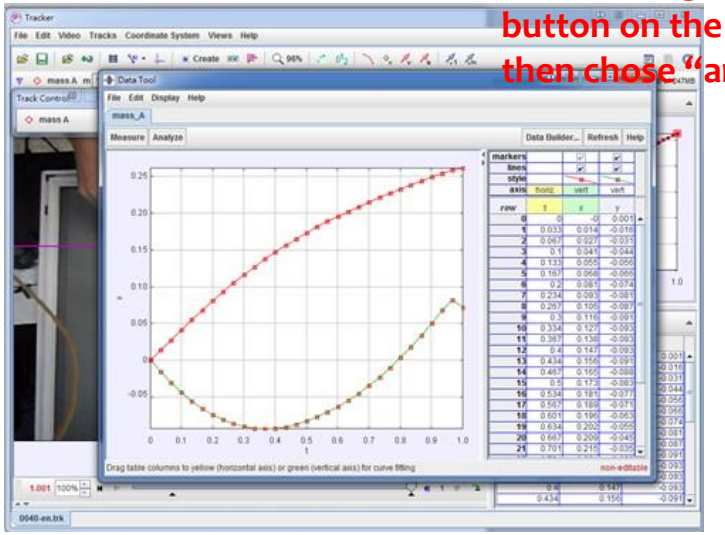


Method Ⅰ：
Toolbar File→Export→Data File→Save As...。
Saving the file, and then to use the external program。

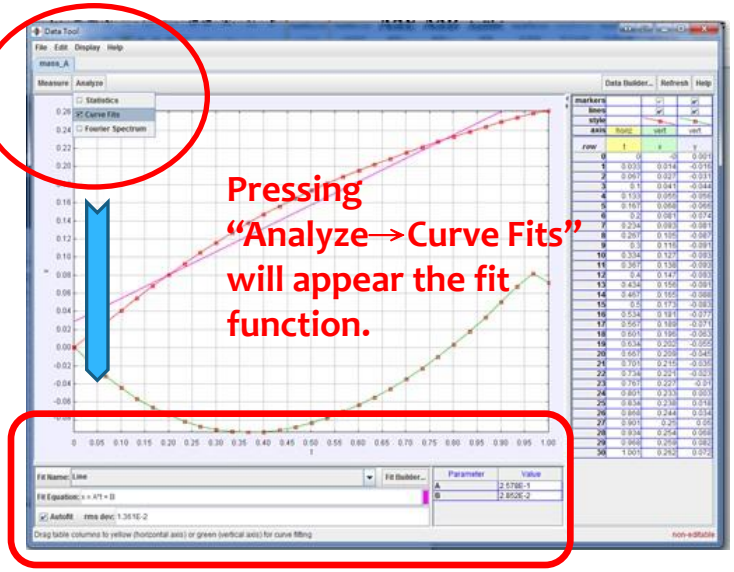


Export format

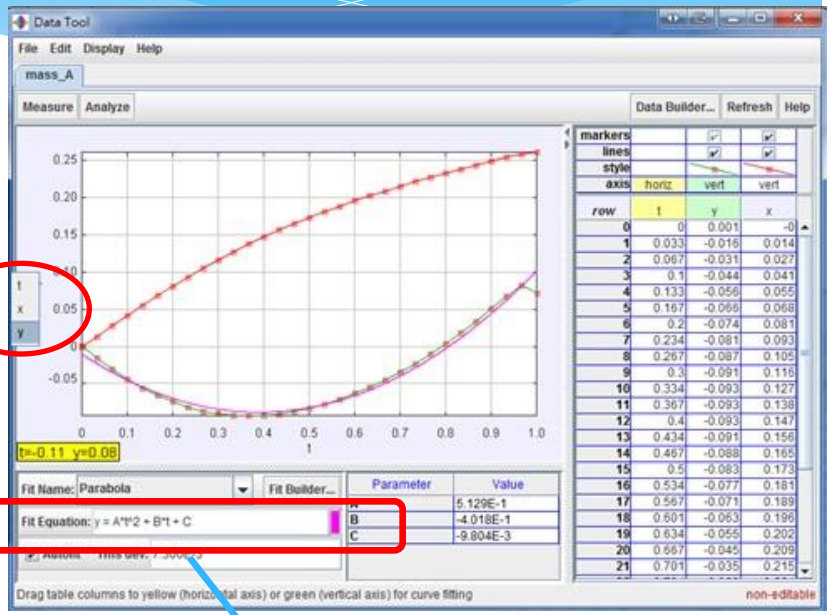
Method II：
Press the right mouse button on the Table and then chose "analyze".



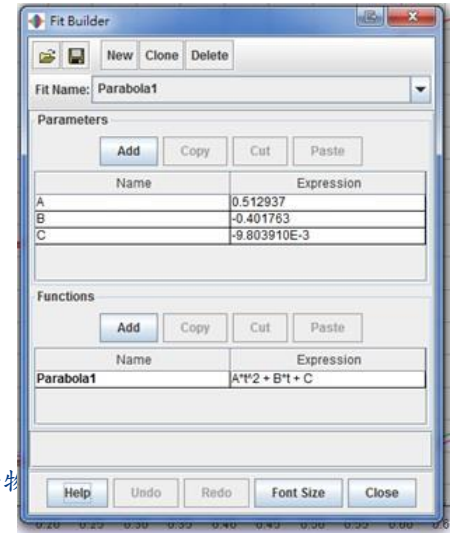
7. Data processing and analysis。



Tick the y axis
will appear
“x, y, t”

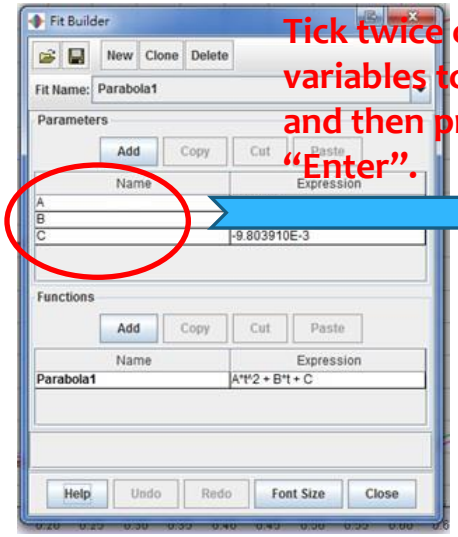


Chose a fitting equation.

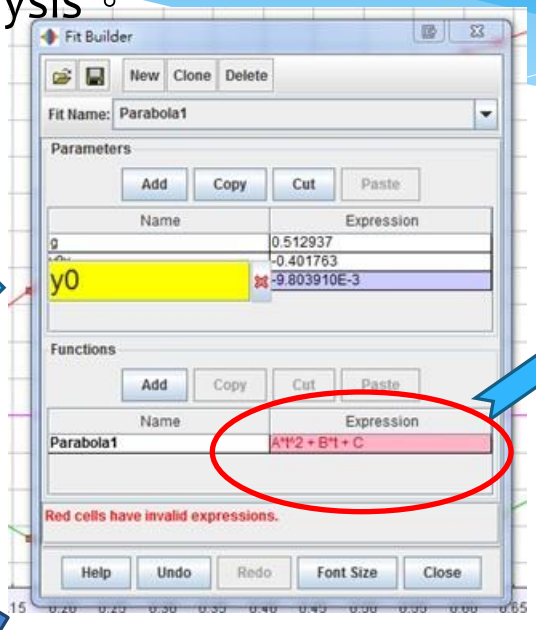


Tick twice on the
fitting equation will
appear “Fit Builder”,
then edit the
parameters of the
equation.

7. Data processing and analysis。

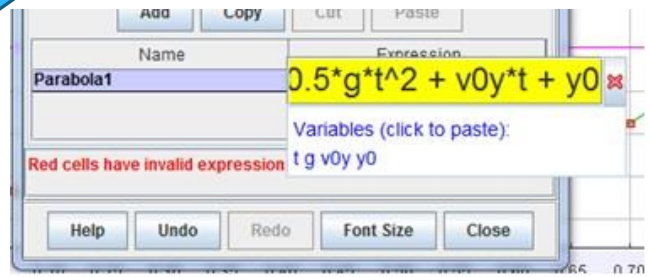


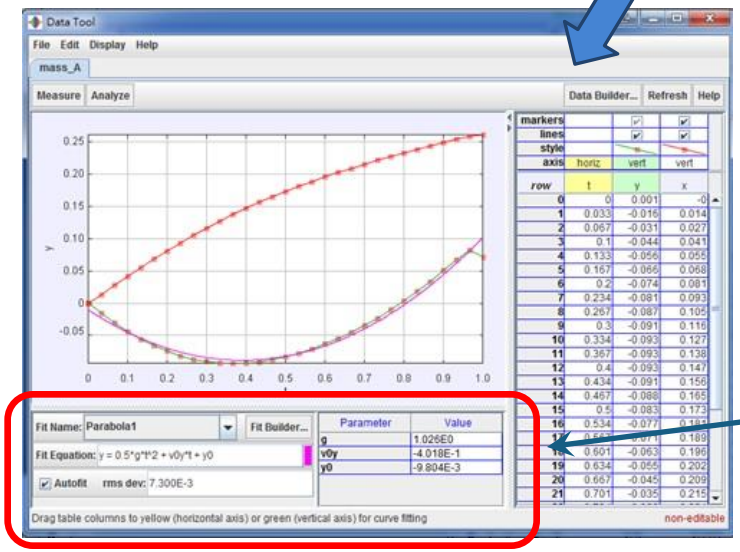
Tick twice on the variables to edit, and then press “Enter”.

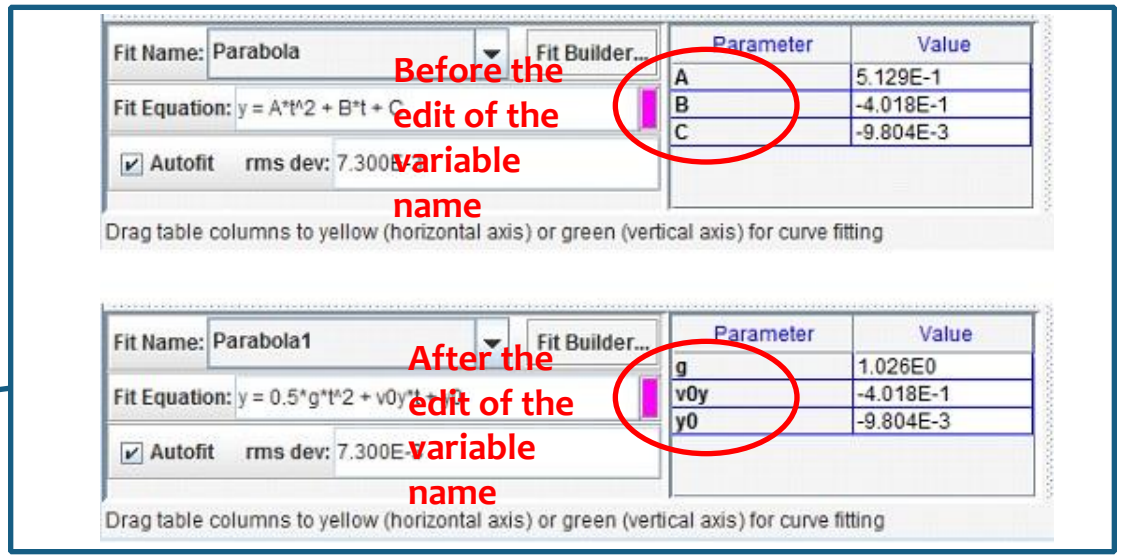


Choose a proper variable name.
Easy to understand the fitting equation.

Tick twice on the equation to edit, and then press “Enter”.





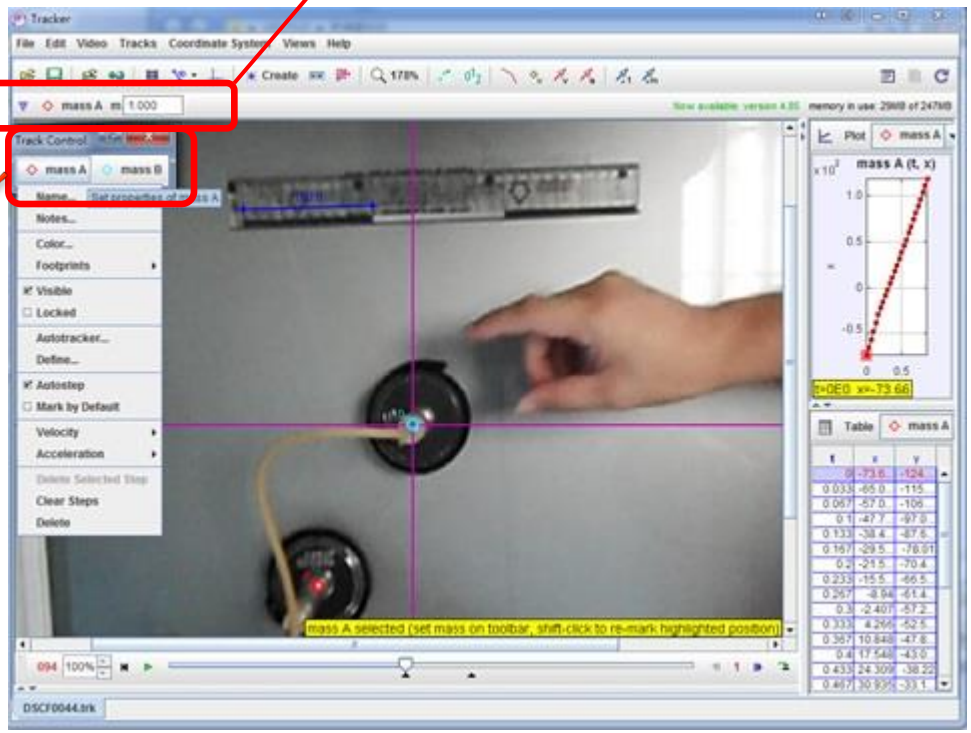


Two Dimensional collision：Tracker Software

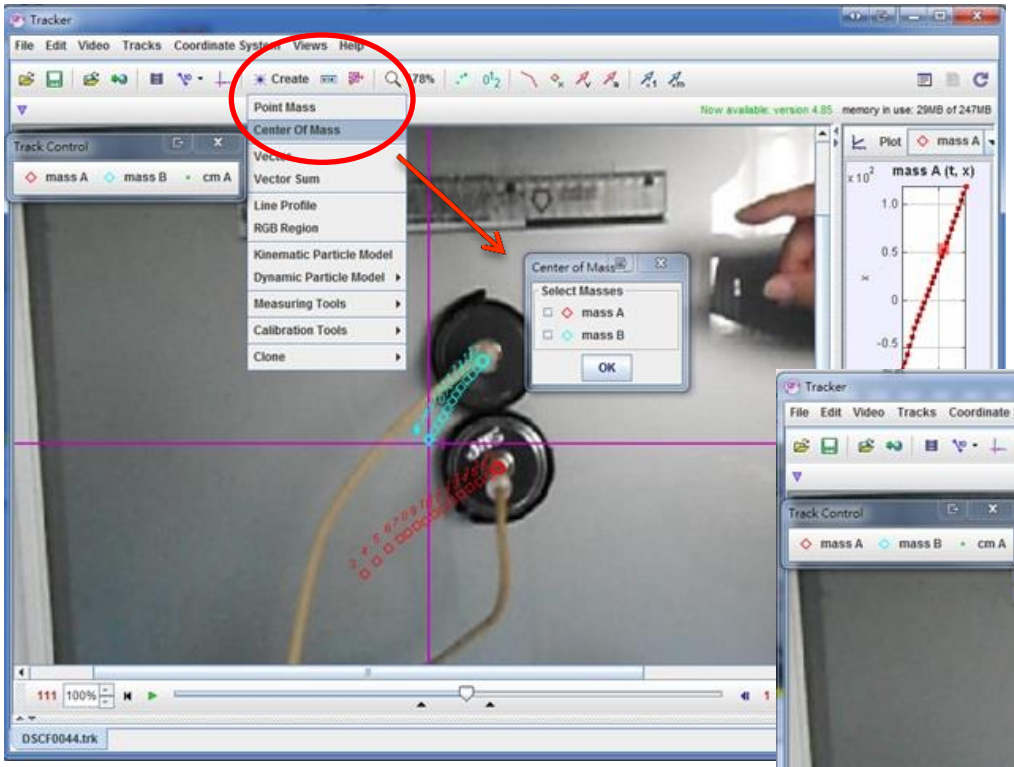
1. Tracker's main user interface。
2. Open the files。【File→Open File…→Video →Open)】
3. Set coordinate and time。
4. Create **Two** Point Mass

Set the mass of each object (unit: kg).

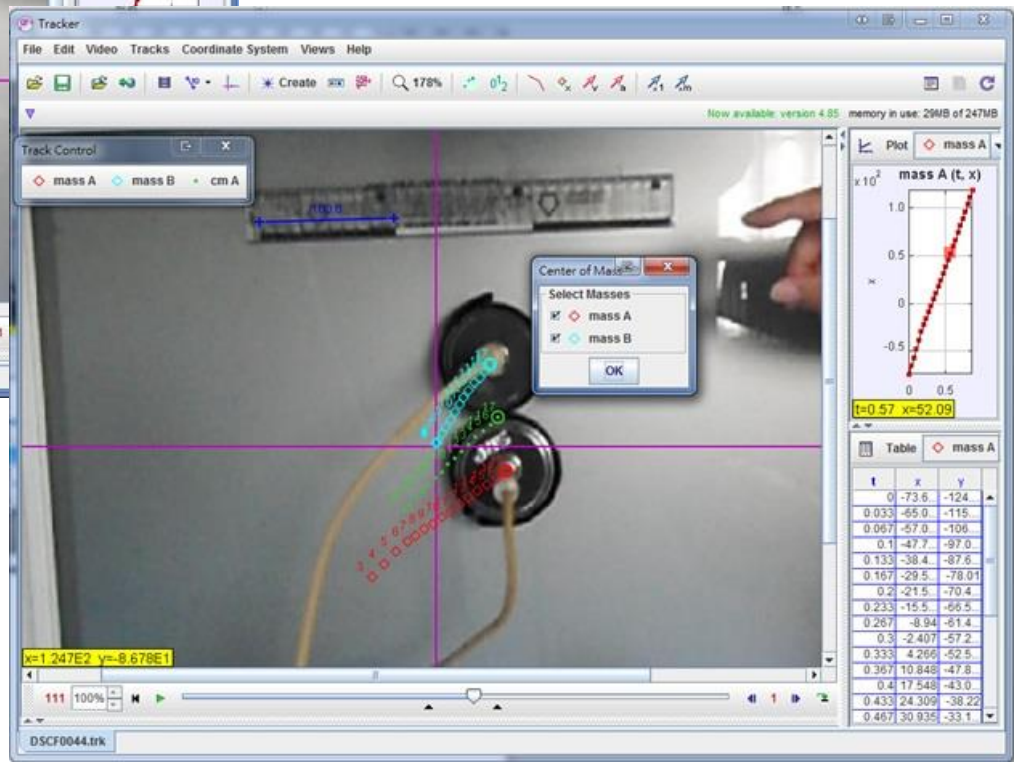
Click left mouse button to rename the objects.



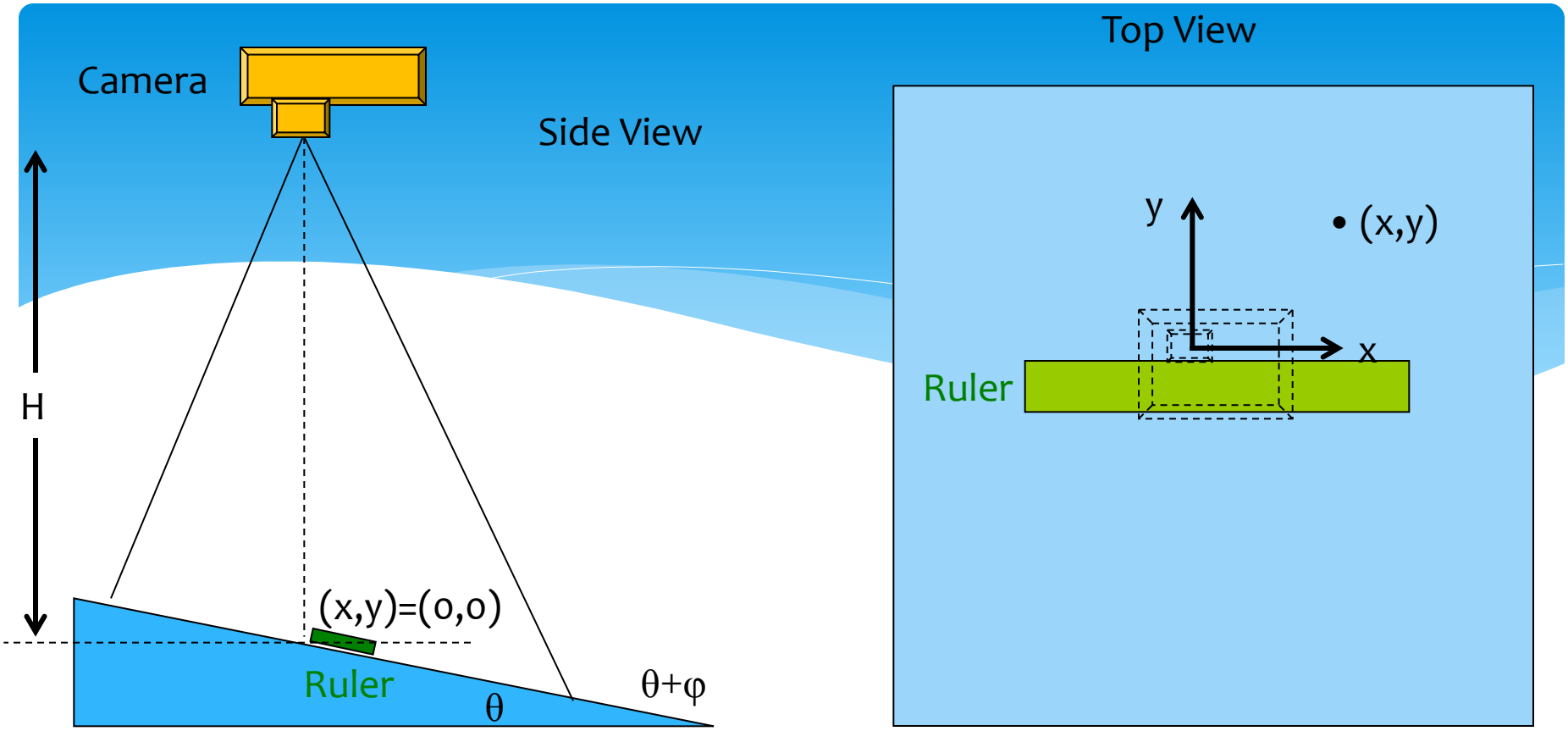
5. Tracked object trajectories---Center of Mass。【Toolbar Tracks→New→Center of Mass】



Check the two object's trajectories.



data analysis



For small x , y (<<H), and small θ

$$x_{real} \approx A\tan\left(x_{measure}/A\right), here\ A \approx H/\cos\left(y_{measure}/H\right)$$

$$y_{real} \approx B\tan\left(y_{measure}/B\right)/\cos\theta, here\ B \approx H/\cos\left(x_{measure}/H\right)$$