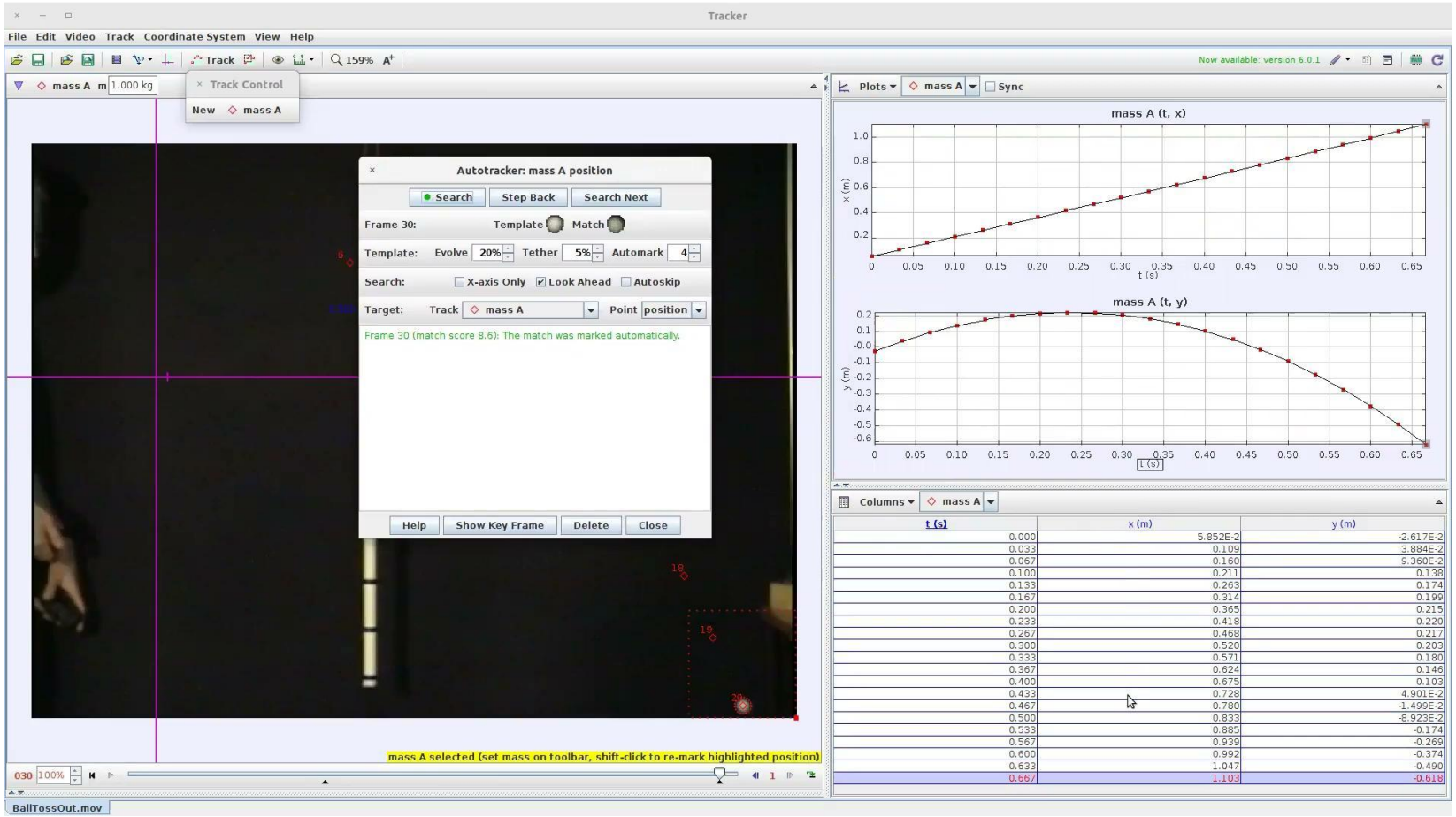
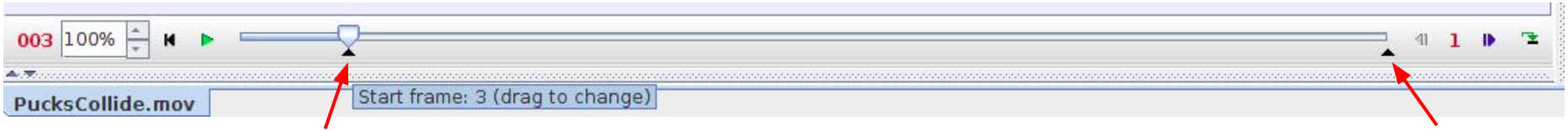
Tracker: cargar video y seguir objeto



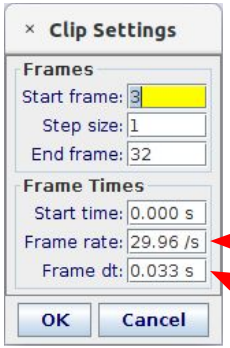
Tracker: cargar video y seguir objeto

(1) Importar video
Archivo/Importar/Video

(2) Seleccionar rango de interés del video → Cuadro inicial y final



(3) Verificar paso temporal entre cuadros
Video/Ajustes del Corte [*Clip settings*]
o
Click derecho sobre video → *Clip Settings*

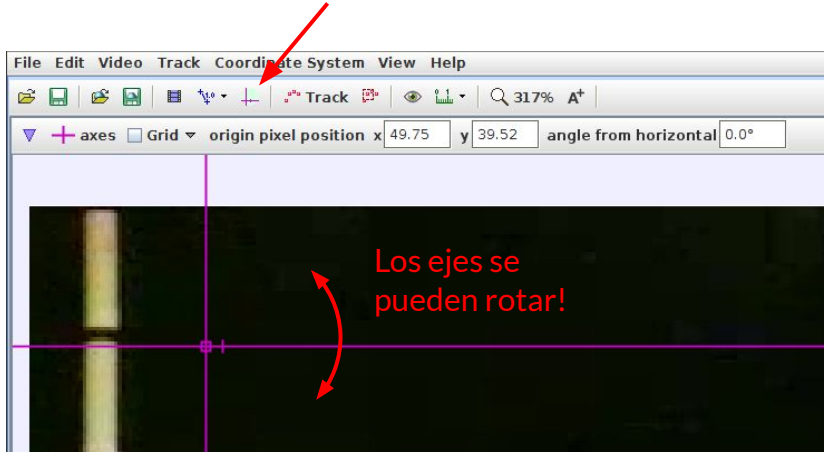


Frame rate = cuadros por segundo (frecuencia!)

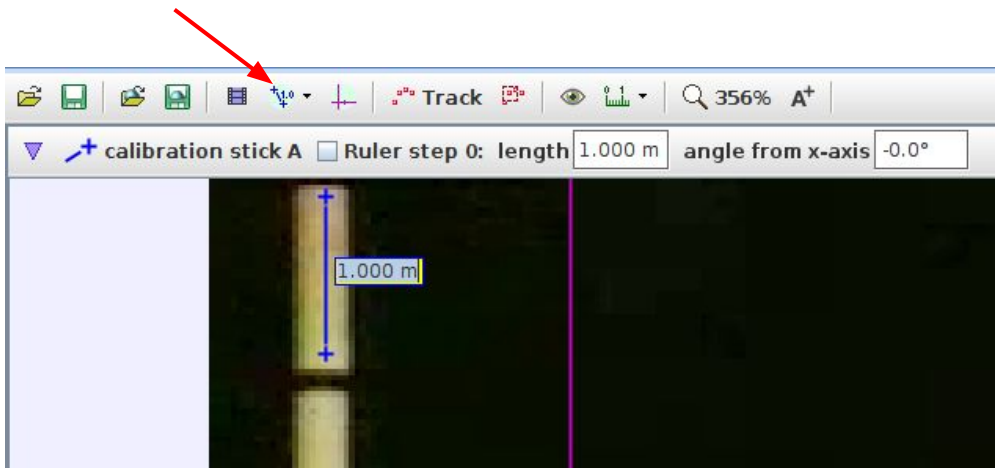
Frame dt = paso temporal = 1/frame rate

Tracker: cargar video y seguir objeto

(4) Fijar sistema de referencia



(5) Definir escala



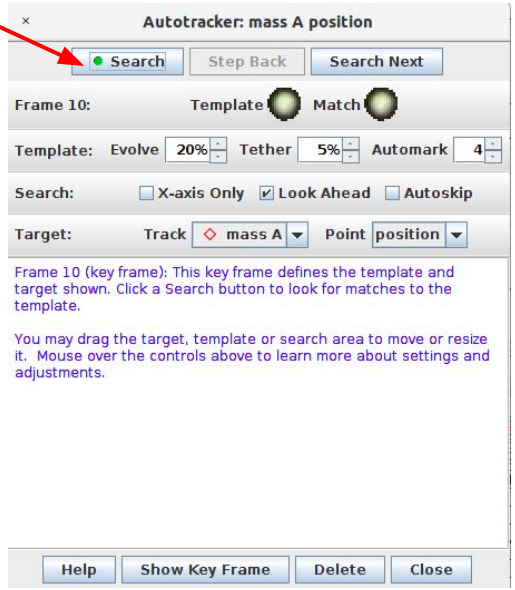
Tracker: cargar video y seguir objeto

(6) Identificar objeto a seguir y trackear

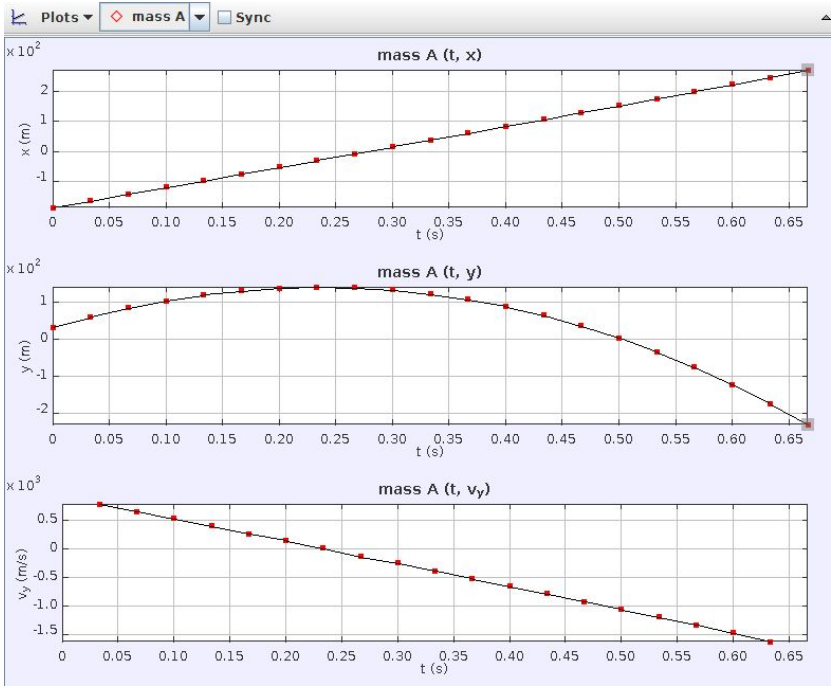
Track/Nuevo/Punto de masa

→ *shift + ctrl + click* en 'centro' del objeto de interés

Seguir objeto en todos los cuadros de interés del video



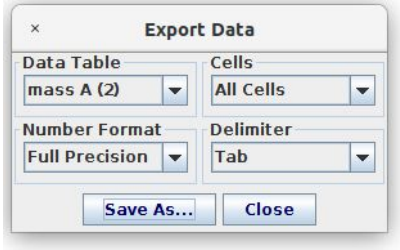
Tracker: visualizar datos



Columns ◇ mass A

t (s)	x (m)	y (m)	v_x (m/s)	v_y (m/s)
0.000	-189.0	32.41		
0.033	-166.3	61.23	677.1	797.2
0.067	-143.8	85.56	679.6	664.6
0.100	-121.0	105.5	683.4	537.3
0.133	-98.30	121.3	681.8	406.8
0.167	-75.61	132.6	680.2	273.3
0.200	-52.95	139.6	684.7	153.5
0.233	-29.96	142.9	686.9	14.25
0.267	-7.161	140.5	686.0	-127.1
0.300	15.77	134.4	688.8	-245.5
0.333	38.76	124.1	691.1	-378.1
0.367	61.85	109.2	691.5	-517.3
0.400	84.86	89.70	692.4	-652.1

Exportar datos y visualizarlos en Python



Contenidos del archivo exportado 'data.txt' [nombre arbitrario!]

```
mass_A
t                   x                   y                   v_{x}               v_{y}               a_{x}               a_{y}
0.0                 0.05852191387806602 -0.02617357461012726 NaN                 NaN                 NaN                 NaN
0.03333333333333331 0.1095763629282316  0.038840941022693365 1.5260831581858385 1.7966683040331852 NaN                 NaN
0.06666666666666668 0.1602607910904553  0.09360431232541849 1.5315128220147798 1.497159486071346  0.16464495311572436 -8.773151890094258
0.1                 0.21167721772921697 0.13865157342744983 1.5411774356916241 1.2120302839391508 0.11379412025806147 -8.743942324772553
0.13333333333333336 0.26300595346989697 0.17440633125469523 1.537493130627552  0.9174024092320537 -0.12601569826881845 -8.8936949032829
0.16666666666666669 0.31417675977105386 0.19981173404292008 1.532642049162853  0.6156112517883282 0.6016060708509395  -9.15388593860285
```

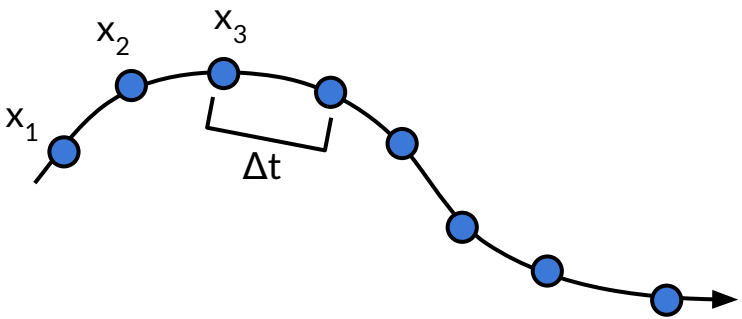
```
import numpy as np

archivo     = 'data.txt'
data        = np.loadtxt(archivo, skiprows=2)

t           = data[:,0]
x           = data[:,1]
y           = data[:,2]
```

Tracker: calculando a(t)

¿Cómo calcula la aceleración Tracker? ¿Es confiable?



$x(t) \longrightarrow v(t) = x'(t) \cong [x(t+\Delta t) - x(t)]/\Delta t$

$x_n = x(t_n) \longrightarrow v_{n+1} \cong [x(t_{n+1}) - x(t_n)]/\Delta t \longrightarrow a(t) = v'(t) \ldots$

¿De qué otra manera podría estimarse a(t)?