Comenius project "In orbit with Europa"

Photometry with SalsaJ

Images of Victoria on November 3rd 2011 Telecope INO_AZ2

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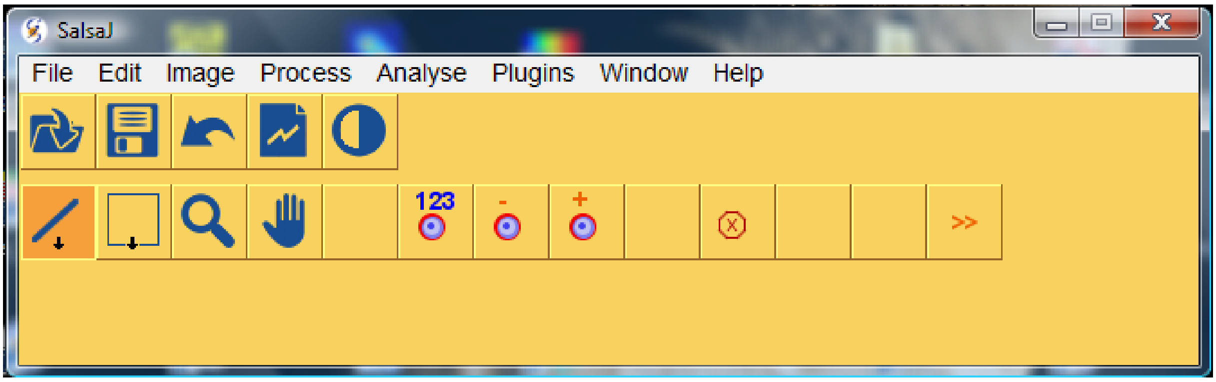
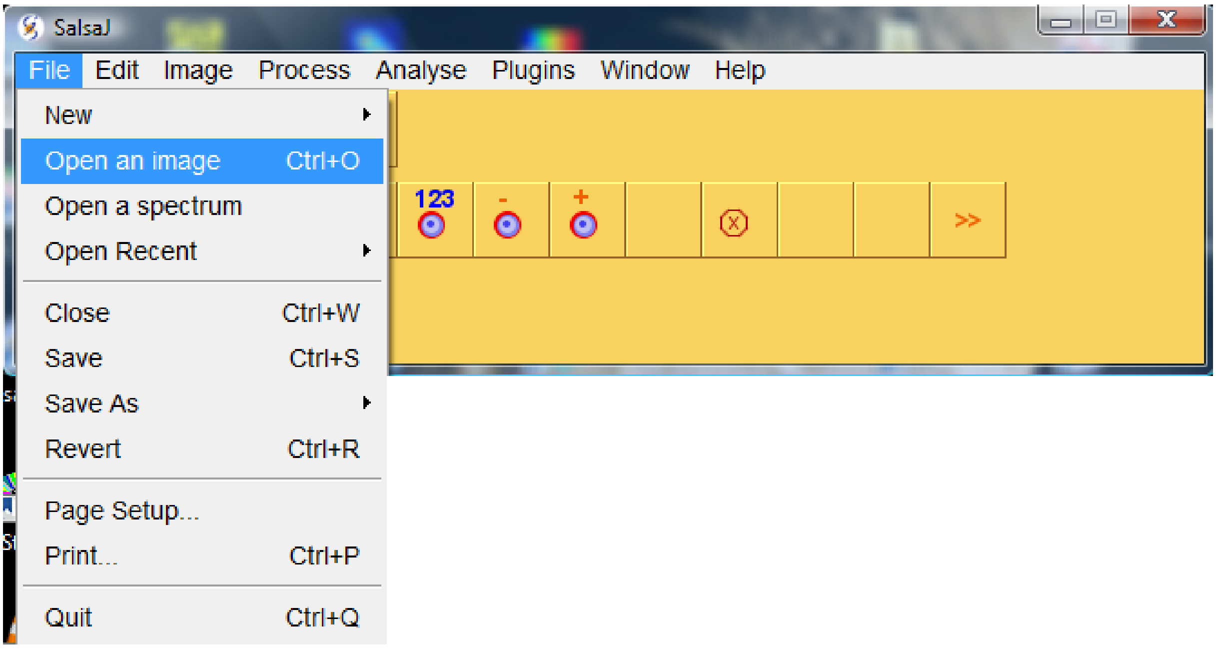
1) First have a look on this link :
   http://resources.faulkes-telescope.com/mod/resource/view.php?id=946
   Authors: Daniel Duggan & Sarah Roberts

2) Loading Images

•First, launch SalsaJ

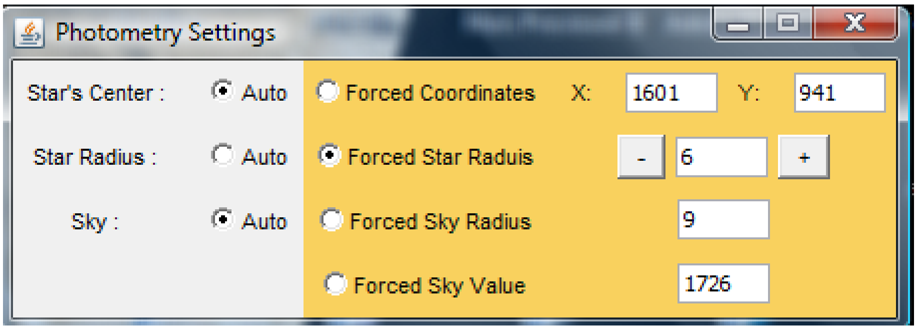


•Next, load your first image.

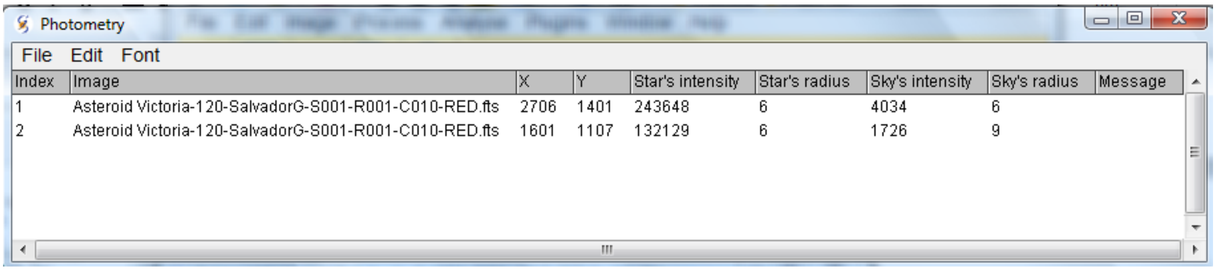


3) Photometry

Analyse>Photometry Settings. At the bottom of the new window, change the Star Radius to 6.



Next, go to Analyse>Photometry and another empty window will then appear.



Using the mouse, click on the standard star in your image. You will see a circle appear and in the new window a data entry is added.

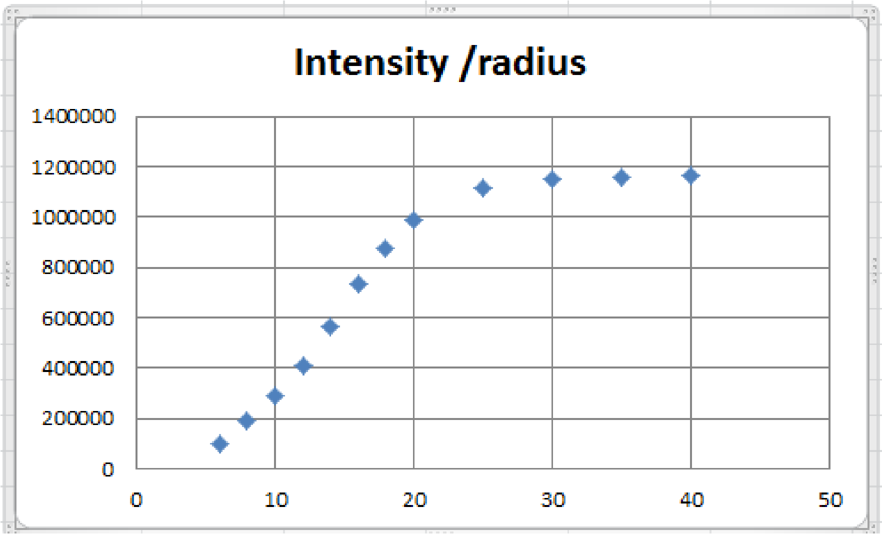
In Excel (or other package) create two columns for Radius and Intensity then, add radius 6 and the intensity value from SalsaJ.

Now increase the radius in SalsaJ by 2 and measure the intensity of the same star again. Add the new data to your spreadsheet. Repeat this until you reach a radius of 20, then start increasing the radius by 5 each time until you reach 40.

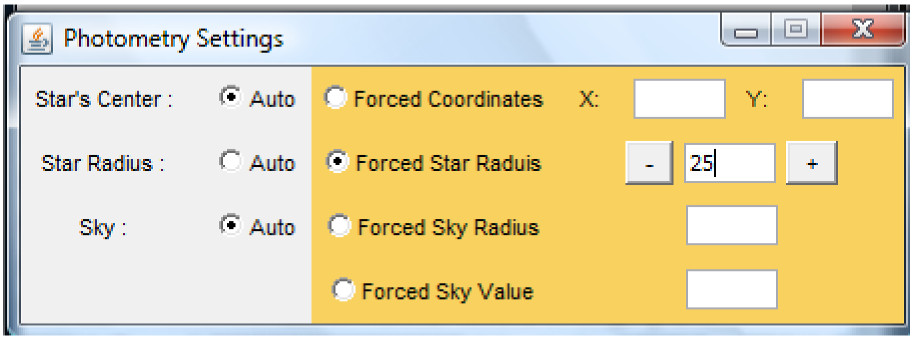
You should have a set of results that looks like this:

Star radius	Star intensity
6	98878
8	193951
10	292034
12	410777
14	567027
16	731848
18	873779
20	985060
25	1116313
30	1149870
35	1159120
40	1162490

When you plot a graph of this data, you should get this:

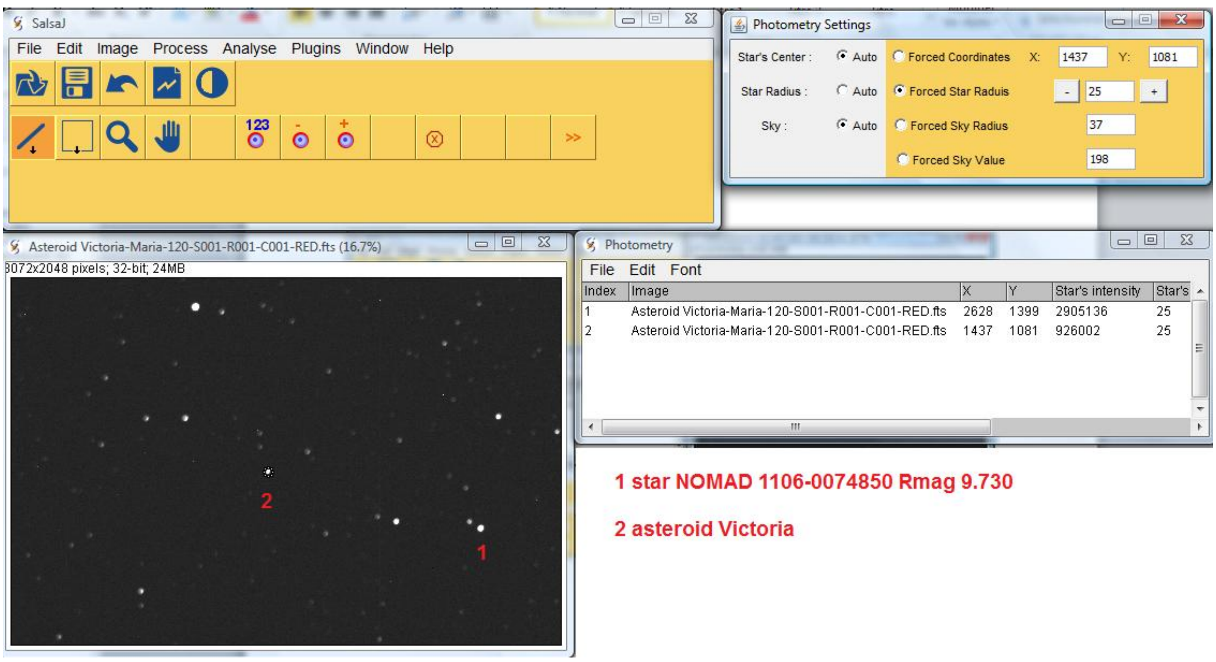


We choose star radius = 25

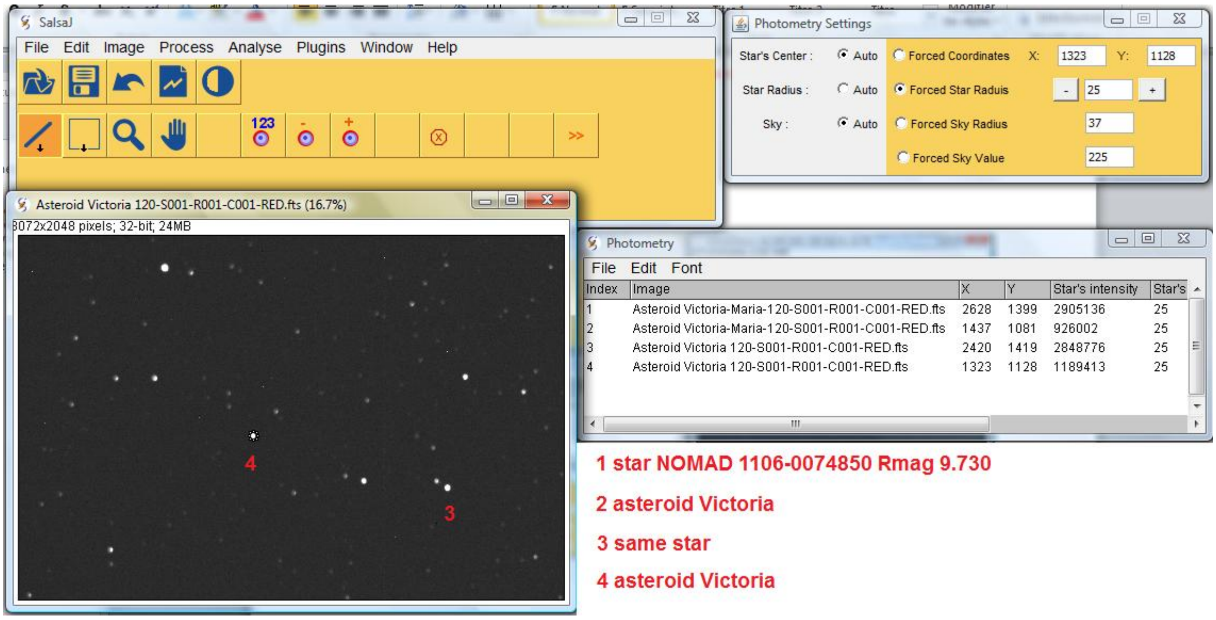


Next, go to Analyse>Photometry

Clic on the comparison star you ave choose on your first image. (1st image 10h06m10s UT), then clic on the asteroid Victoria.



•Next, load your second image. (2nd image 12h03m03s UT)



4) <u>Calculations</u>

m = -2.5 log (I)

1st measure I1 = 2905136 and I2 = 926002 --> m1 = -16.16 (R=9.730) --> cste = 25.89

m2 = -14.92 --> **mag (R) Victoria = 10.97 (10h06m06s UT)**

2nd measure I3 = 2848776 and I4 = 1189413 --> m3 = -16.14 (R=9.730) --> cste = 25.87

m4 = -15.19 --> **mag (R) Victoria = 10.68 (12h03m03s UT)**

5) Using a standard star : Landolt G 9742

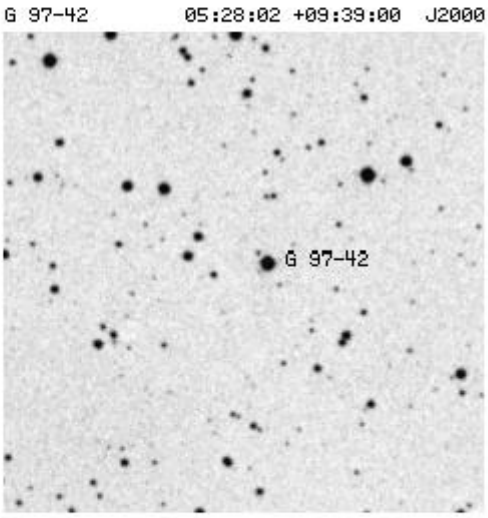
http://www.noao.edu/wiyn/queue/images/charts/c41.html

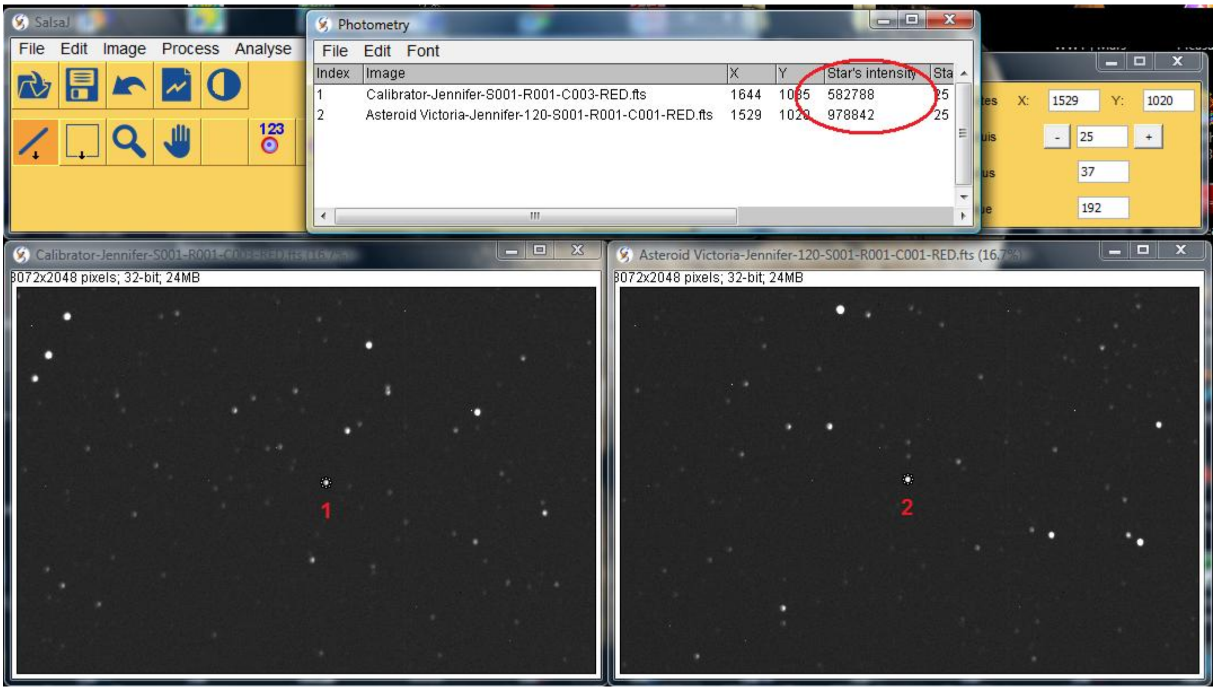
V = 12.443

V-R = 1.171

R = 12.443 – 1.171

R = 11.272





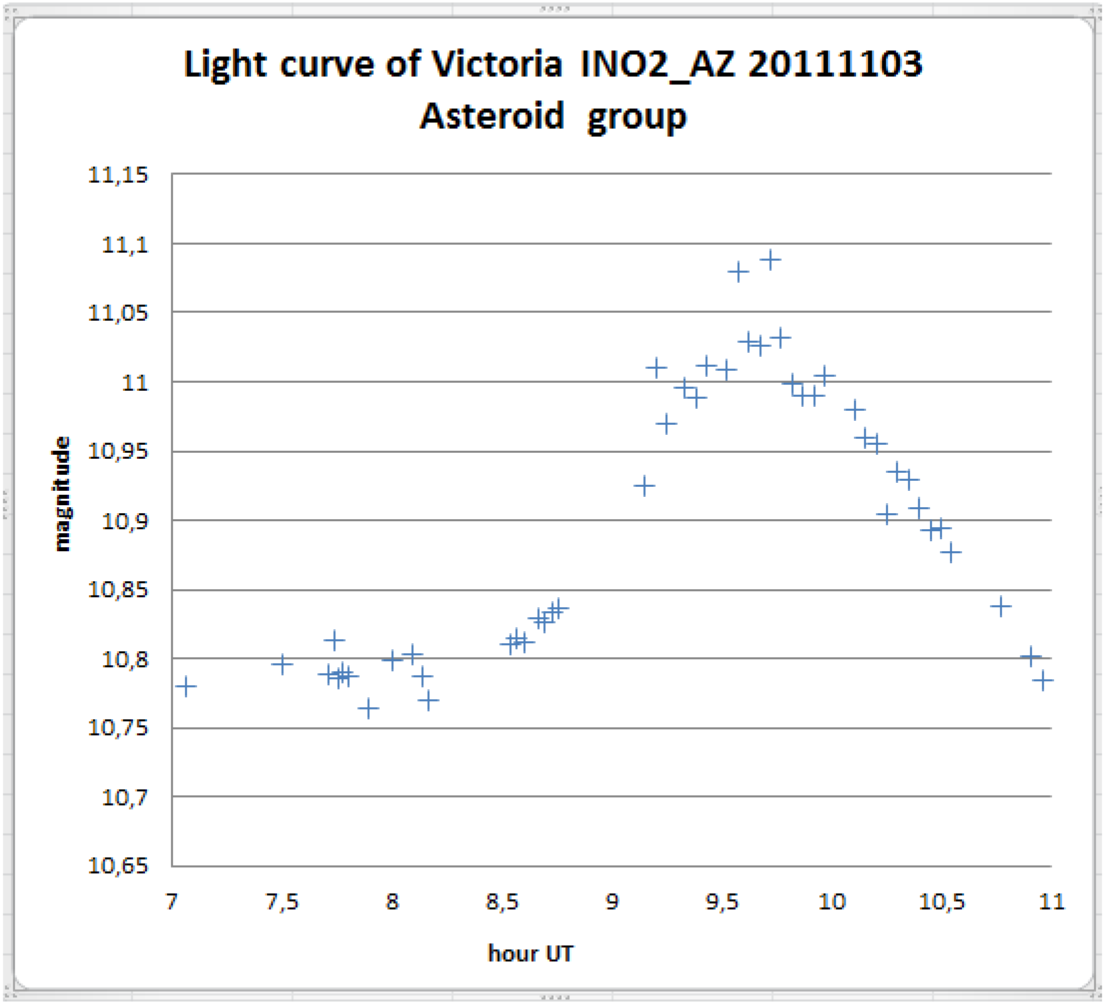
Number 1 : image Landolt star G9742 taken at 9h03m57s UT

I1 = 582788 --> mR = -14.41 (R=11.272) --> cste = 25.686

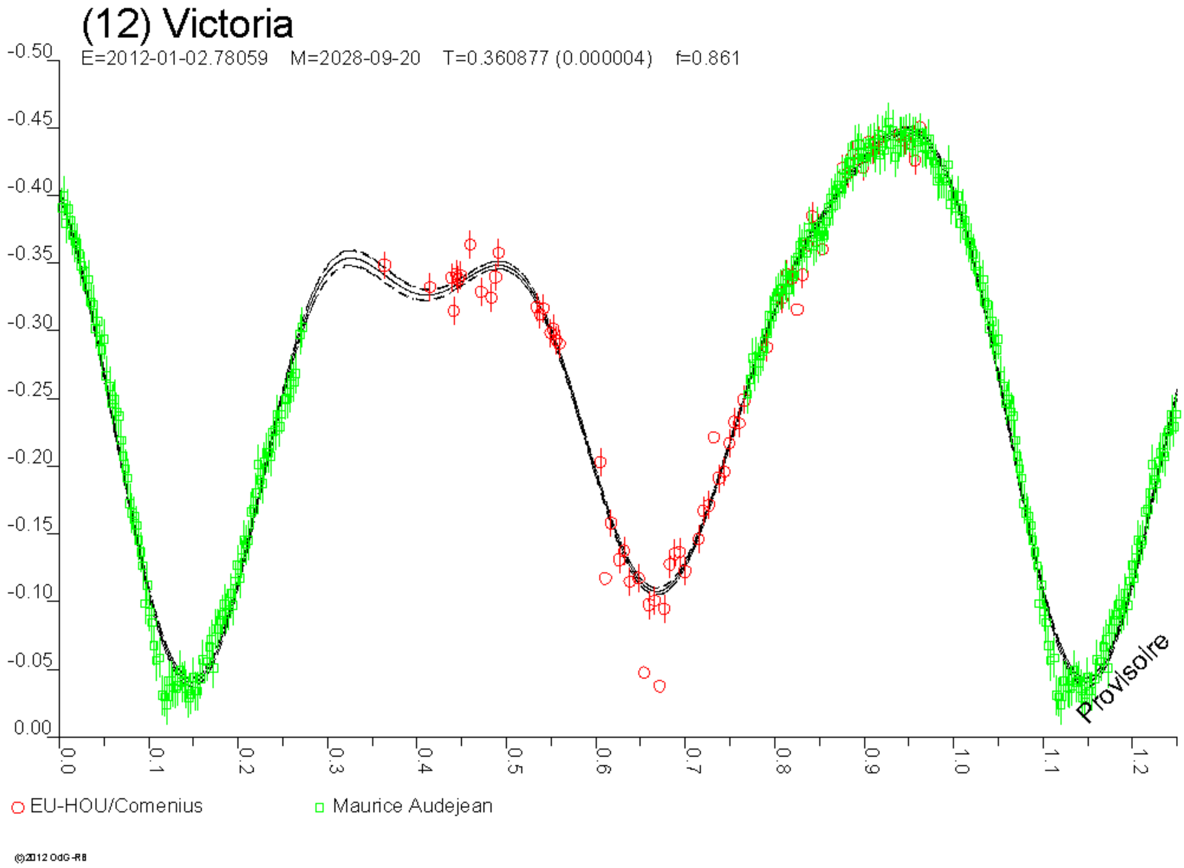
Number 2 : image Victoria at 9h09m11s UT

I2 = 978842 m2 = -14.98 --> **mag (R) Victoria = 10.71 (9h09m11s UT)**

Below the light curve of Victoria obtained with this method :



And the light curve obtained by Raoul Berhend (University of Geneva) from our datas :


(12) Victoria
E=2012-01-02.78059 M=2028-09-20 T=0.360877 (0.000004) f=0.861
-0.50
-0.45
-0.40
-0.35
-0.30
-0.25
-0.20
-0.15
-0.10
-0.05
0.00
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.8
0.9
1.0
1.1
1.2
Provisoire
EU-HOU/Comenius
Maurice Audejean
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