User manual for the planetary transit experiment

# Introduction

The computer system for driving the experiment is composed of four distinct elements, all of them running at the same time in a single computer. The details for accessing the computer can be found in section 2.

The first software element is the star simulation, whose operation is described in section 3.

The second proprietary utility is the payload simulator, which acquires the light curves. Its operation is described in section 4.

The third part of the software system is the analysis tool for the light curves, detailed in section 5.

The final part is a non-proprietary printing utility so that the PDF files generated for the visitors can be printing on paper. It operation is described in section 6.

# Access to the computer

The computer to operate the experiment is a Dell laptop labeled NB38-TA21. It should already be installed at the stand.

The credentials to access the laptop are as follows:

|  |  |
| --- | --- |
| Username: | vicouser |
| Password: | didpfdvu.97 |

Please be aware that the laptop will not be connected to the internet, so any additional files that you might need (e.g. an image of the Sun) will have to be brought on a pen drive.

# The target

The first element of the experiment is the simulated target, mainly a big white circle on a black background. This tool is programmed in python and shall be invoke with a double-click on the desktop icon labeled “Star Generator” (to access the desktop you can press Win+D).

The window that pops us shall be dragged to the second monitor located on the other side of the pendulum to act as a target. Maximize the window by double-clicking on the top menu bar.

The simulated sun can be adjusted for size and oblateness, in can have an adjustable sun spot and even pulsate with varying amplitude, just to demonstrate the kind of effects that can be seen in a light curve.

The controls for the star are as follows:

|  |  |
| --- | --- |
| Arrow left: | Make star wider |
| Arrow right: | Make star thinner |
| Arrow up: | Make star bigger |
| Arrow down: | Make star smaller |
| r: | Make star round |
| s: | Toggle the sun spot |
| Alt+Arrow left: | Make sun spot wider |
| Alt+Arrow right: | Make sun spot thinner |
| Alt+Arrow up: | Make sun spot bigger |
| Alt+Arrow down: | Make sun spot smaller |
| Alt+r: | Make sun spot round |
| Alt+h: | Move sun spot left |
| Alt+k: | Move sun spot right |
| Alt+u: | Move sun spot up |
| Alk+j: | Move sun spot down |
| p: | Toggle solar pulsation |
| A: | Increase the amplitude of the pulsation |
| a: | Decrease the amplitude of the pulsation |
| Esc: | End the simulation |

As a general rule, the pendulum experiment shall be conducted on a static Sun so that the light curve is as clean as possible.

# The payload

# The light curve analysis

# The printing utilities