A simple interactive R-script with graphical user interface to plot model created by VStar

Version 0.05
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AAVSO Vstar (www.aavso.org/vstar), variable star data visualization program, can create light curve models in form of R expressions (R is “a free software environment for statistical computing and graphics” www.r-project.org). There is a script provided along with VStar to plot such models from within R environment (https://sourceforge.net/p/vstar/code/HEAD/tree/trunk/script/plot_model.R). However a user should modify the script itself to present model equation which is not too convenient. To make things easier a new script having interactive graphical interface have been developed.

Prerequisites

To use the script, R base system should be installed. The newest version of R can be downloaded from its official site www.r-project.org.
Unlike previous versions, this version (0.05) does not utilize “gWidgets” package, it relies on “tcltk” package directly. So there is no need to install additional packages.
Screenshots below were made using version 0.03, however program’s look did not change.

Installing the script

Download ZIP file from https://github.com/mpyat2/VStarModelPlot
(use [Clone and Download]->[Download ZIP]) then unpack it into a directory by your choice.
That zip file contains the following files:

`sampledata`	folder which contains sample data files: “data.txt” file contains sample lightcurve, “model.txt” contains model points (created by VStar) and “r-model.txt” with a text of a model equation. Files “data.txt” and “model.txt” can be opened and plotted (see explanation below); “r-model.txt” contains a text of an equation which can be copied and pasted into “VStar equation” textbox to plot (see below).
`plot_model2.R`	main R script
`run.bat`	batch file to run the application under Windows
`run`	bash script to run the application under Linux

Configuration and running

Under Windows:

1. Open “run.bat” batch file in notepad, define path to your R interpreter by setting RPATH variable and save it.

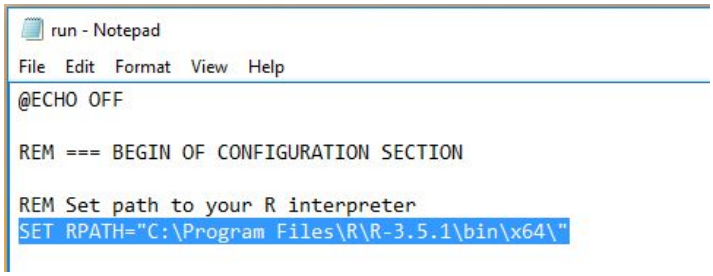

Fig. 1

2. Start “run.bat” batch file (you could make a shortcut to it on your desktop).

Under Linux:

1. Open terminal, go to a folder with unpacked files and make “run” bash script executable:
   ```
   $ chmod 777 run
   ```
2. Execute “run” script:
   ```
   $ ./run
   ```

Using the script

When started, the script shows the following dialog (after printing some messages to a terminal window):

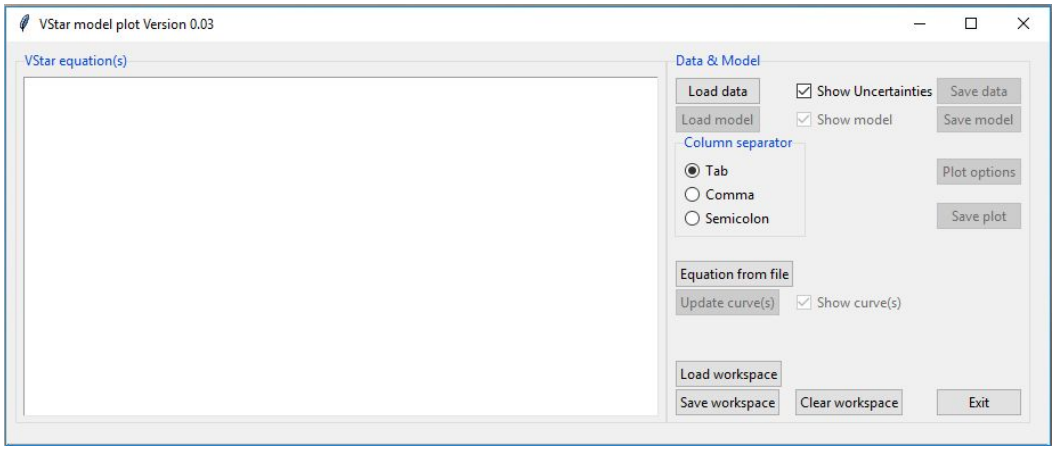

Fig. 2

“Load data” button is used to open a data file and plot a light curve. A text data file should contain at least two columns: the first is Julian Day numbers, the second is magnitudes. File can be tab- comma- or semicolon-separated, a kind of separator is selected by “Column separator” radio-buttons. A data file can contain the third column with uncertainties. Extra data columns are ignored. You can find an example of a data file inside “sampledata” subfolder.
After loading, the data is displayed in a R plot window. If data file contains the third column with uncertainties, they will be shown (if “Show uncertainties” checkbox is checked):

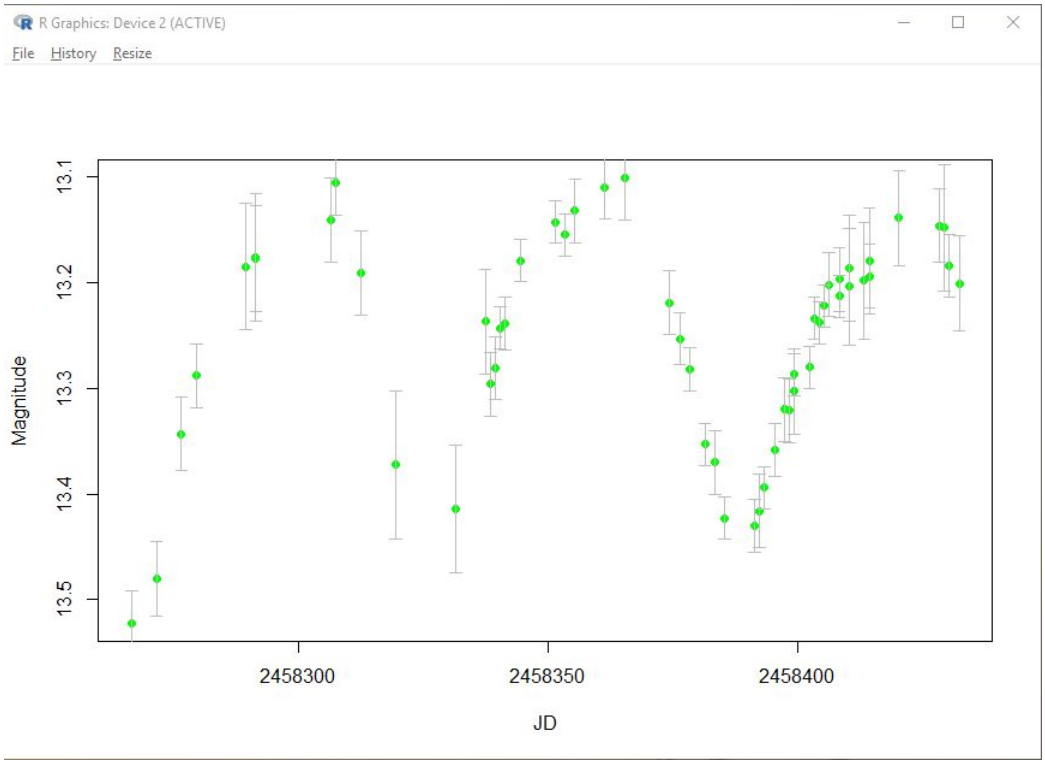

Fig. 3

When data is loaded, “Load model” button became active so user can load a data file containing model values (calculated by VStar and saved into a separate file):

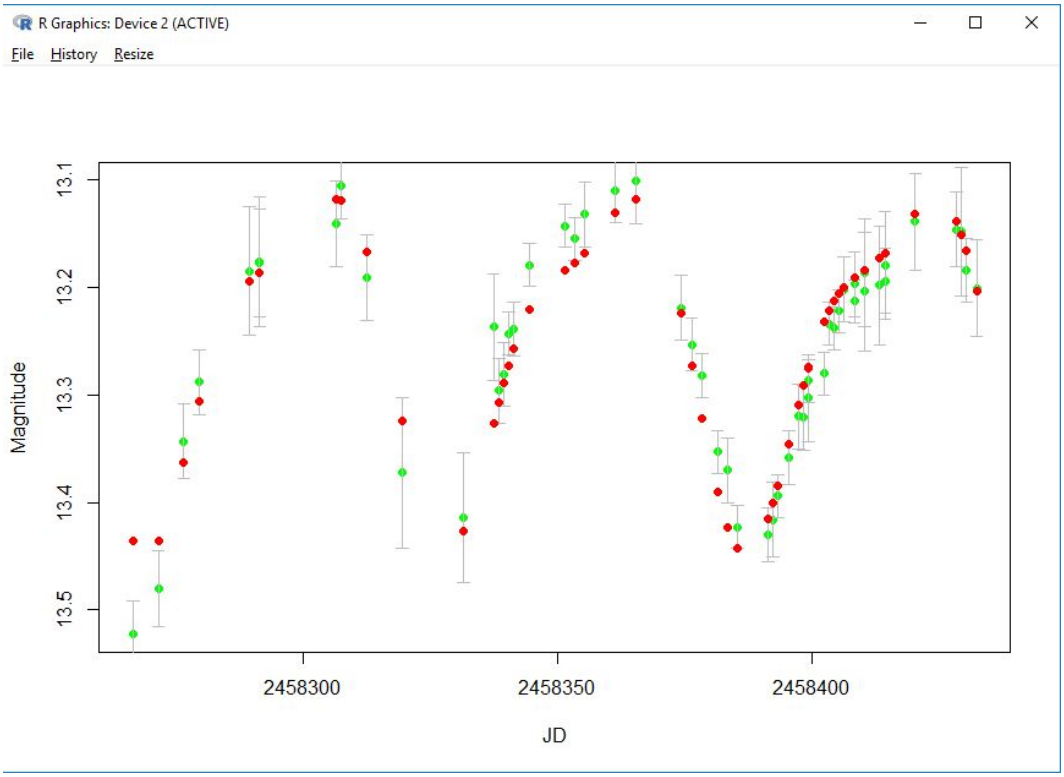

Fig. 4

A user can control a visibility of model values by “Show model” checkbox.

A model equation calculated by VStar can be copied from VStar's "Model Information" dialog and pasted into "VStar equation" field. Then pressing "Update curve(s)" button will plot the equation:

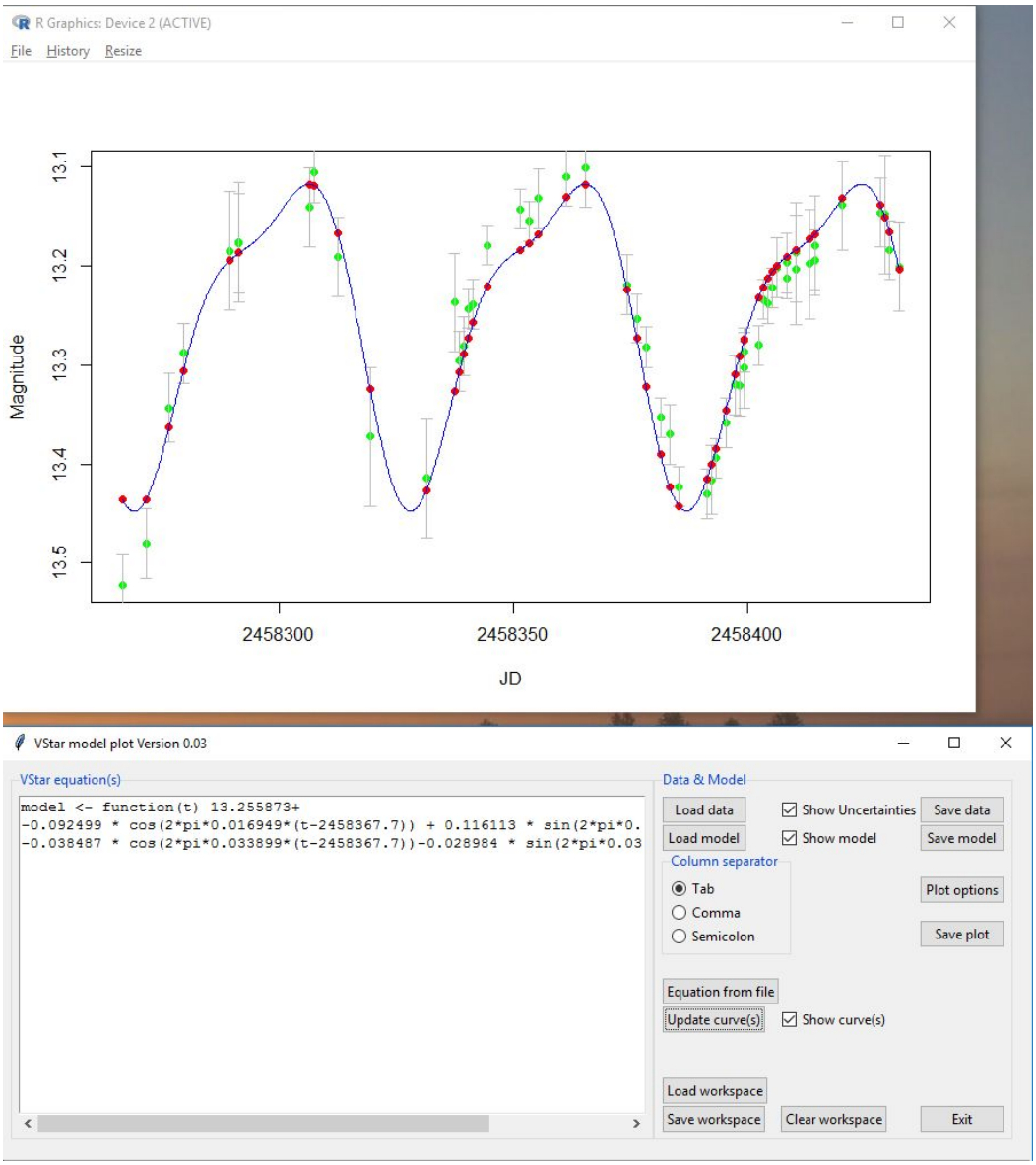

Fig. 5

You may plot several models at once. The equations must be separated by special comment line:
#$
(see Fig. 6).

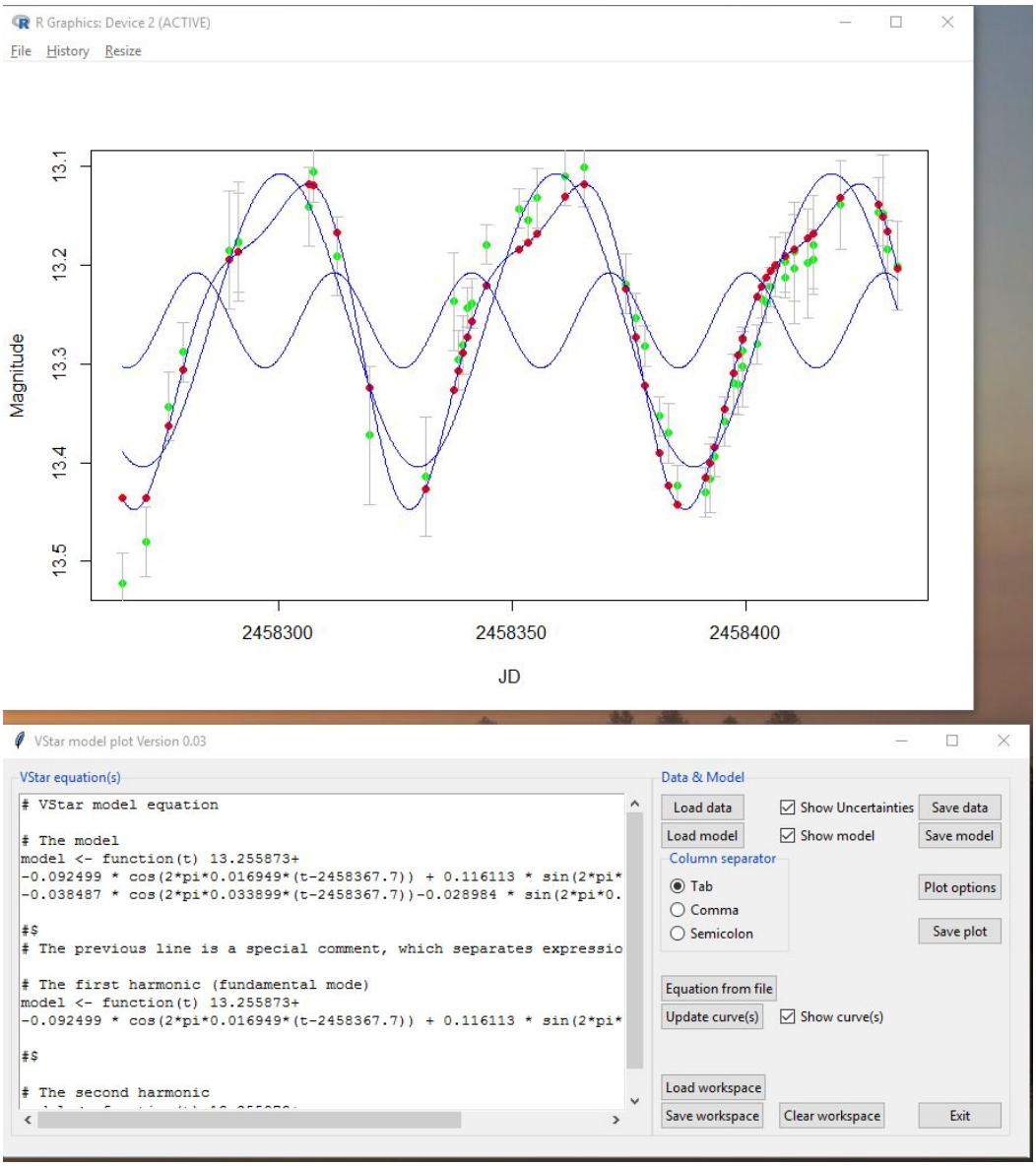

Fig. 6

The whole “workspace” can be saved into a file using “Save workspace” button; it can be restored lately with “Load workspace” button. A “workspace” file contains all data to be plotted. To “extract” data and model from a workspace, use “Save data” and “Save model” buttons respectively. See “sampledata” subfolder for an example of a saved “workspace” file: “test.vsmodelplot”