

Light Curve Analysis – Variable Stars 2016/17

All data are available in the text files named “LastName1.dat” and “LastName2.dat” and include two columns: time in days and instrumental magnitudes. Select your files and download your data.

The software to conduct frequency analyses is Period04, which is available for download under www.lenzpat.at/period04. Period04 has a built-in online help function, provides a tutorial and test data sets for practicing. It is available for installation on Windows, Linux, and Mac platforms.

In the file “LastName1.dat” you will find photometric time series of pulsating stars obtained by MOST, CoRoT or Kepler (for which I provide subsets of the full four-year data to avoid long calculations). Use this data set to learn how to use Period04, do a prewhitening sequence for the 10 first frequencies. Try to answer the following questions:

1. What type of pulsator could it be?
2. Do you think there are more frequencies present in your data set? If so, why do you think so?
3. Determine the S/N ratios of your frequencies – are they all significant?
4. Do you think that all your frequencies come from the star?
5. What additional information would you need to decide (better) which type of object you are working on?

The files LastName2.dat contain light curves of other objects, i.e., non-pulsators. Examine them and describe what you are seeing.

Please bring your results to the exam day on Feb. 1, 2017.

If you want, you can also write down your findings in a short report. But this is not required and up to you.

If you have questions, please contact me any time. I am in the office until Dec 16, 2016, and will be back on Jan 10, 2017. During my time of absence, please send me an email if necessary.