

# The BLASGALF database

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**Abstract.** BLASGALF is the name of an online, regularly updated list of known RR Lyraes exhibiting the Blazhko effect. It is an acronym of Blazhko Stars of Galactic Field. The list currently contains about 270 stars. It gives basic information about positions, brightnesses, pulsation and modulation periods based on data from catalogs and more than sixty papers. Using this database we found a lack of Blazhko stars with appropriate period characteristics. We introduce the present form of the list and discuss future plans for this database.

**Keywords.** RR Lyr, Blazhko effect, databases

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## 1. Introduction

The idea of the database was induced by the actual need of an overall list of RR Lyraes that show the Blazhko effect<sup>†</sup>. Although there were few lists available (e.g. Smith 1995, Kolenberg & Uluş 2008, Le Borgne *et al.* 2012), none of them was comprehensive.

Our work started with the publication of the first, hard copy version of the list containing 242 Blazhko variables (Skarka 2013). To keep the list up to date, we subsequently launched the online version at <http://physics.muni.cz/~blasgalf/>, which is regularly updated.

At the beginning of August 2013 BLASGALF contained 270 stars. This number fluctuates as new stars are added or false Blazhko stars are removed. BLASGALF is thus an excellent tool that provides an actual overview of Blazhko variables.

## 2. Application of the database

BLASGALF could assist with the provision of the statistics on the numbers and incidences of Blazhko stars. There are

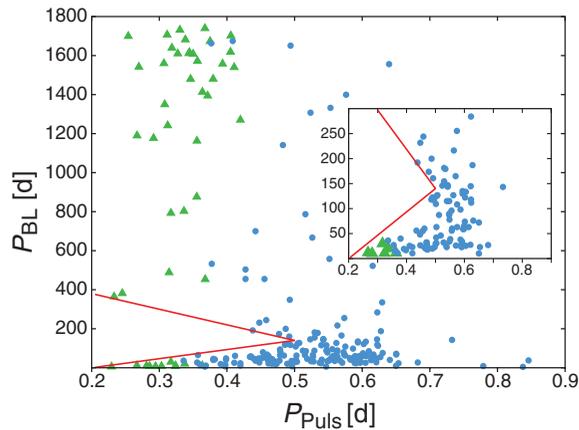
- 218 RRab type stars (205 single modulated, 4 variables with changing Blazhko period, 9 stars with multiple modulation period),

- 52 first overtone Blazhko RR Lyraes (50 single modulated, 2 multi modulated),

in the database. Fundamental mode RR Lyraes constitute 81% of known field Blazhko stars. About 5% of them show compound Blazhko effect with more than one modulation period. If we consider the incidence rate of Blazhko stars (270) among the stars in the GCVS catalogue (altogether 6143 stars of RRab and RRc type), this percentage is only about 4%, which is a very small percentage – recent estimates are about 47% (Jurcsik *et al.* 2009). We stress that our database does not contain Blazhko stars from large sky surveys like Catalina (<http://www.lpl.arizona.edu/css/>), which would certainly affect such statistics.

In addition to providing a quick overview of the stars, BLASGALF offers the possibility to compile basic statistics for the Blazhko variables. Figure 1 shows the distribution of

<sup>†</sup> Amplitude and/or phase modulation of the light curve, which was firstly noted in RW Dra by S. N. Blazhko (1907).



**Figure 1.** Distribution of Blazhko periods of stars according to their basic pulsation periods. RRc stars are plotted with triangles, while circles correspond to RRAb stars.

Blazhko RR Lyraes in a  $P_{BL}$  vs.  $P_{Puls}$  diagram. It is clear that the stars are spread out more or less randomly when the Blazhko period exceeds 300 d. Below this limit the distribution has a very interesting shape. There is a lack of stars in the area delimited by the red lines, which intersect at a point near  $P_{Puls} = 0.5$  d and  $P_{BL} = 140$  d. The slope of the lower line is approximately 467, while the slope of the upper line is  $-800$ . There is no explanation for this interesting feature.

### 3. Future plans and conclusions

We would like to make our website more comprehensive and user friendly. The most important, soon available, improvements would be links to the VSX (Watson *et al.* 2006) and GEOS databases (Le Borgne *et al.* 2007) for each star. Other intended changes relate to the organization of the website – sorting according to various characteristics, listing with regard to particular constellation, a new section with stars only suspected of the Blazhko effect until now, etc. Other ideas are to extend the current information with light curves, amplitudes of the Blazhko effect and Fourier parameters. In addition, basic information about the Blazhko effect might be provided on the website.

BLASGALF offers the possibility of a quick overview of Blazhko stars. One application of this list was demonstrated on the Blazhko period distribution.

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