

SEARCH FOR SOUTHERN GALACTIC BE STAR CANDIDATES

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We present the preliminary results of a search for southern Galactic Be star candidates within the group of miscellaneous variables of the ASAS-2 Catalog of Variable Stars using statistical, photometric and morphological criteria.

Be stars (BeS) are non-supergiant very rapid rotators, with spectral types between late O and early A, whose spectra show or have shown at some time one or more Balmer lines in emission (Collins 1987). This rapid rotation can be innate or acquired, and combined to a mechanism, such as non-radial pulsations, causes episodic matter ejections, creating a circumstellar decretion disc where the observed lines in emission are originated (Martayan et al. 2011).

Several questions about the BeS are unsolved, and systematic surveys are necessary to answer them. In a statistical study of Galactic bright BeS, Miroshnichenko (2011) noted that the better observed BeS were these accessible from the northern hemisphere. Actually, there are not reports of systematic searches for Be stars candidates (BeSC) in the southern galactic hemisphere. For this reason we begin a search for BeSC into the All Sky Automated Survey (ASAS) database.

The ASAS-2 was a long-term project monitoring bright stars ($V \in [8, 14]$ mag and $I \in [7, 13]$ mag) of the southern hemisphere, with two small telescopes located at Las Campanas Observatory (Pojmański 1997). We perform our search into the Miscellaneous Catalog of Variable Stars (MCVS), containing about 3600 objects showing quasi-periodic or irregular variability.

Normally, a search for BeSC is performed using the range of intrinsic colors and absolute magnitudes expected for BeS, that implies the knowledge of distance and reddening to each star. However, in our case, the stars are located at different distances and the extinction and reddening values are different for each star. For this reason, we start our search using a method based on correlations of statistical

parameters (Sabogal et al. 2008), in order to reduce the sample to those stars in the range of skewness and kurtosis excess expected for BeSC. Then we add the following criteria:

1. Discard stars with morphologies in their light curves different to the expected for BeSC (eclipsing binaries, RR Lyrae, etc.).
2. Reject stars with different spectral types to those of BeS: we perform a cross-correlation of the coordinates of our stars with those of the catalogs OGLE, SIMBAD, GCVS and WEBDA.
3. Begin the selection of stars in the range of colors of BeS: We have (V-I) colors from ASAS data, and we calculate the reddening for each star using the extinction values given by Schlafly & Finkbeiner (2011), that are useful for $|b| > 5^0$, but unreliable for low latitudes ($|b| < 5^0$). Many of the stars with $|b| > 5^0$ are discarded. Probably they are semiregular pulsating red giants.

In order to select the final reliable sample of southern Galactic BeSC from the ASAS-2 MCVS, we will use extinction 2D-maps from VVV survey and the Galactic extinction map from Kohyama et al. (2013). Once this selection has been done, the sample of new southern galactic BeSC will be confirmed through multicolor photometry or a spectroscopic follow up using small/medium size telescopes.

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