

Studying the southern Beta Cephei stars using TESS

The TESS satellite provides us with precise high quality time series data for stars including hot O- and B-type stars, which was mostly skipped in other missions. We make use of this photometric data to study variabilities in B type stars. Analysis of HN Aqr (Handler et al. 2019), already showed the perspectives for massive star asteroseismology based on such data, along with realizing the importance of runaway BCEP pulsators. Some of our past works also showed that rotational variability in B type stars are not so uncommon.

Here, the focus will be mainly on our efforts to study pulsation in southern Beta Cephei (BCEP) variables and the promising candidates therein. All stars in our list of candidates were analysed to confirm their pulsations and around 50 new BCEP variables were found. To further confirm their candidature and to place these objects in the HR diagram, 5 weeks of low resolution spectroscopic observations were carried out for more than 450 stars using the SPUPNIC spectrograph of 1.9 m telescope, South African Astronomical Observatory (SAAO). Reduction of the data and parameters extraction are discussed briefly. For the interesting BCEP variables, we will proceed to mode identification and seismic modelling to understand the structure of these stars and try solving some long held problems including the runaway star puzzle.

Primary author: Mr CHOWDHURY, Sowgata (Nicolaus Copernicus Astronomical Center)

Co-authors: HANDLER, Gerald; KAHRAMAN, Filiz (Nicolaus Copernicus Astronomical Center)

Session Classification: Student presentations