

K2 Proposal on behalf of KASC WG3

Astero-seismology and rotation of Be stars

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The Be stars are normal B stars which show emission, or partial emission, in one or more Balmer lines. The emission is due to circumstellar material ejected by the star which occur in episodic events. The mass loss mechanism is unknown, but pulsation in a star rotating close to the critical rotational velocity is the currently held opinion (Rivinius, 2013ASSP...31..253R). Since Be stars are rapid rotators, rotation clearly plays an important role. Another view holds that the trigger is an eruptive event, perhaps a flare (Balona, 2013ASSP...31..247B). If pulsation is the trigger, then all Be stars are very close to critical rotation and must pulsate. Observations of high photometric precision should be able to test whether or not all Be stars pulsate. Many Be stars are known to be periodic variables, but the periods are consistent with the rotation periods of the stars which are around 1–3 d.

Monitoring and studying the light variations of Be stars provides important clues to the unknown mechanism, especially during an outburst. There are few examples of such observations which is why *Kepler* data will be so important. There are two very faint Be stars in the *Kepler* field. These stars must be at large distances from the Galactic plane and it is not certain whether these stars are classical Be stars. Therefore, nothing has emerged from *Kepler* observations regarding the variability of Be stars. Since the variations have a timescale of at least a few hours or longer, long cadence observations are adequate.

There are 52 known classical Be stars within 12° of Field 0. A list of these stars is attached in file `WG3_Be.Field00.csv`.