Description of the format of BRITE Data Release 5 (DR5) data files

- Column (1): HJD — heliocentric Julian Day of the start of exposure.
- Column (2): FLUX — total flux measured within the optimal aperture [ADU/s].
- Column (3): XCEN — x coordinate of the centre of gravity of a profile with respect to the origin of a raster [pixels].
- Column (4): YCEN — y coordinate of the centre of gravity of a profile with respect to the origin of a raster [pixels].
- Column (5): CCDT — temperature of the CCD [$^{\circ}$C].
- Column (6): JD — Julian Day of the start of exposure[1].
- Column (7): PSFC1 — blurring parameter #1. The parameter is defined as follows:

$$\mathrm{PSFC1} = \sum_{\mathrm{p}\in M_+} \left(\frac{I_\mathrm{p}}{I_\mathrm{total}}\right)^2, \quad I_\mathrm{total} = \sum_{\mathrm{p}\in M_+} I_\mathrm{p}, \tag{1}$$

  where I_p is the signal in pixel p belonging to mask M_+ (the concept of stellar masks is explained in paper by Popowicz et al., in preparation), and I_total is the sum of signals from all pixels within the mask M_+. Since the signal in each pixel is normalized by I_total, the PSFC1 is independent of variations of stellar flux (variability of a star). When the stability of a satellite is good, the relative intensities of pixels reach their maximum values, and therefore their squares are maximized. When blurring occurs, the charge is spread more evenly among pixels and the value of PSFC1 is reduced. The idea of this parameter is based on the image energy, which is the largest when the image is sharp and lower when the flux is spread over a larger CCD area.
- Column (8): PSFC2 — blurring parameter #2. The parameter is defined as

$$\mathrm{PSFC2} = \frac{1}{4I_R^2}\sum_{k=1}^{4}\sum_{i=1}^{L} I_i J_{i,k}, \quad I_R = \sum_{\mathrm{p}\in R} I_p, \tag{2}$$

  where I_R is the sum of signals from all pixels in a raster R, $J_{i,k}$ is the signal in the i-th pixel in the image that has been shifted by one pixel in one of the four (k) directions: up, down, left and right. The summing is over L pixels, which the image I has in common with its shifted copy J. This blurring parameter is based on the correlation of the image with its shifted copies. The correlation increases when blurring is larger. Thus, sharp images will have low values of PSFC2. The PSFC1 and PSFC2 parameters are strongly correlated. These are the same parameters as A and B described by Pigulski et al. (2016, A&A 588, A55) in their Appendix A.
- Column (9): RTSC — indicator of a random telegraph signal (RTS), a variation of an impulsive noise in pixels. The RTSC parameter is the indicator of a possible RTS in a raster column. In order to calculate the parameter, the median intensity is computed in each column of a difference image, excluding pixels identified as belonging to stellar profile. The RTSC is defined as the maximum over the absolute values of the mentioned medians. However, its sign is preserved, so that RTSC can be either positive or negative.
- Column (10): RTSP — RTSP is also related to the RTS phenomenon too, but this time, the signals in all pixels within the optimal aperture are compared. The analysis for a given i-th image is made using two neighbouring raw images, $(i-1)$-st and $(i+1)$-st. Since for these images, the star is located at the opposite side of a raster (this is chopping mode), it is easy to find the differences in intensity for all pixels confined in the stellar profile in the i-th image. The RTSP is defined as the maximum over the absolute values of these differences. Similarly to RTSC, its sign is preserved, so that RTSC can be either positive or negative.

[1]This column was introduced to identify the corresponding original frames which names include JD.

- Column (11): APER0 — This parameter is the median value of all pixels located outside both apertures in a differential image. It was introduced to account for small differences in background which may occur between two positions in chopping mode of observing.
- Column (12): FLAG — This parameter indicates if the optimal aperture is fully rendered within a raster (FLAG $= 1$) or not (FLAG $= 0$).