



The planet-host pulsating star HR 8799 as seen by MOST and BRITE

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1. Background

HR 8799 is a well-known planet-host star with at least 4 planets discovered by direct imaging [1]. HR 8799 is also a gamma Doradus pulsator [2], target of several previous ground-based variability studies [2,3,4,5]. Asteroseismic studies are important for age and mass determination of the planetary-mass companions [6].

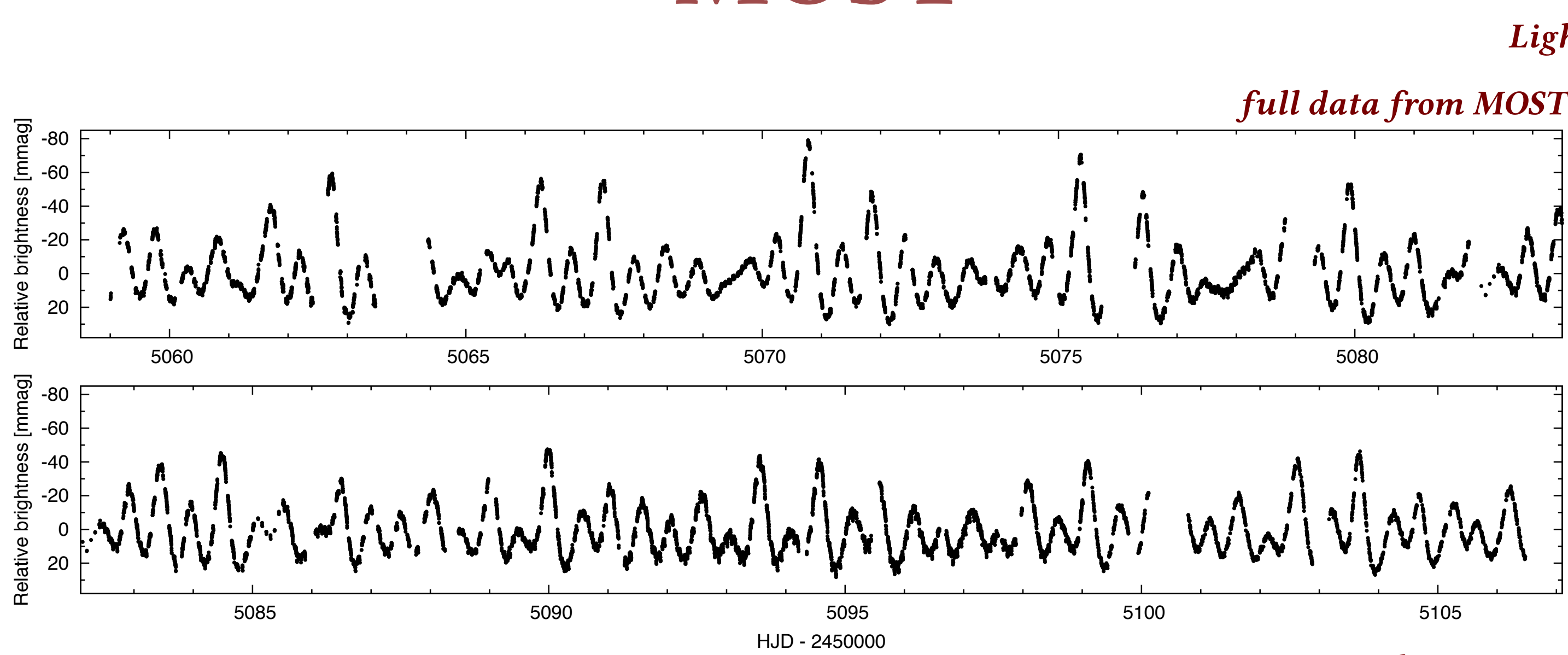
2. The data

BRITE observed HR 8799 in 2017 for 140 days, obtaining the most extended photometric data on this pulsator to date.

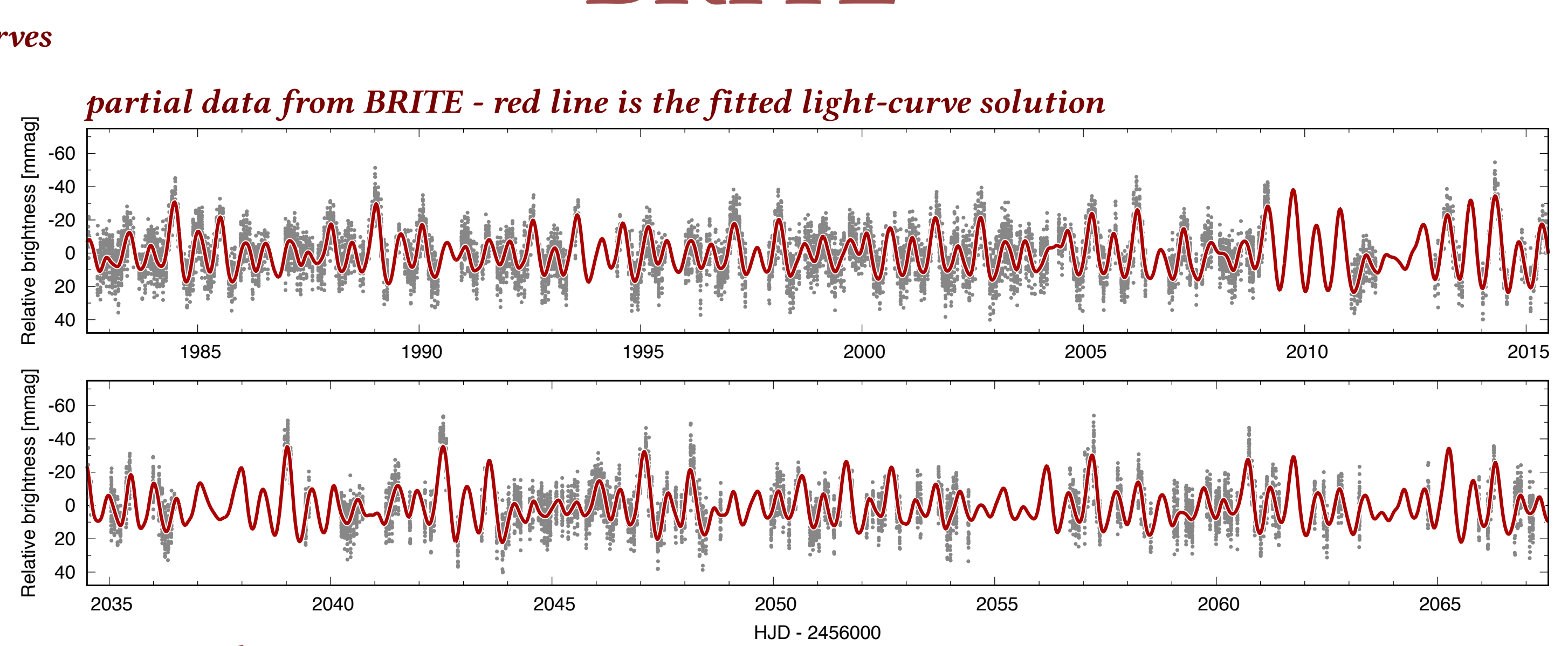
Previously, the MOST satellite also observed the target in 2009 for 48 days [7].

3. Side-by-side comparison of the MOST and the BRITE light-curves

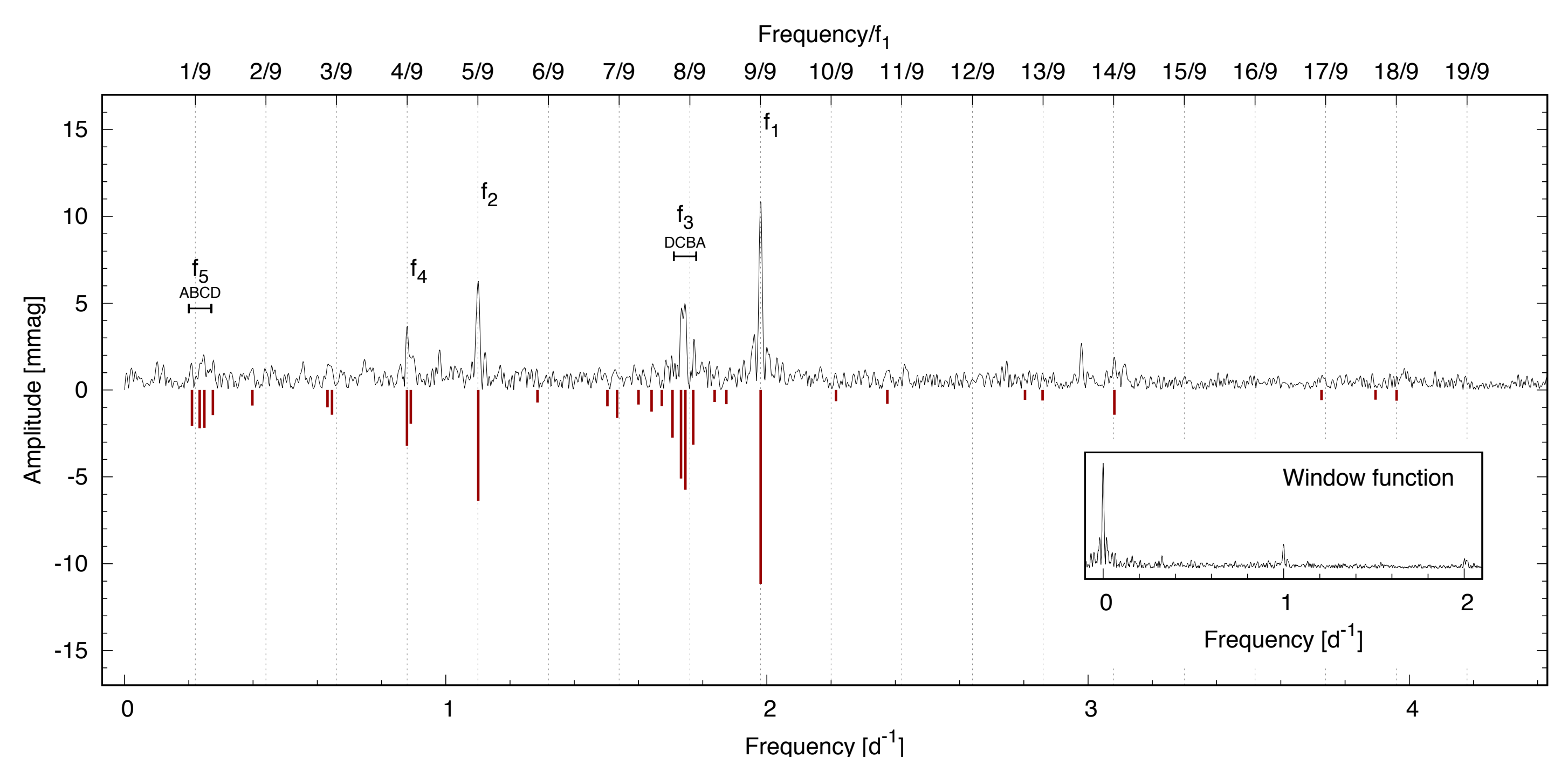
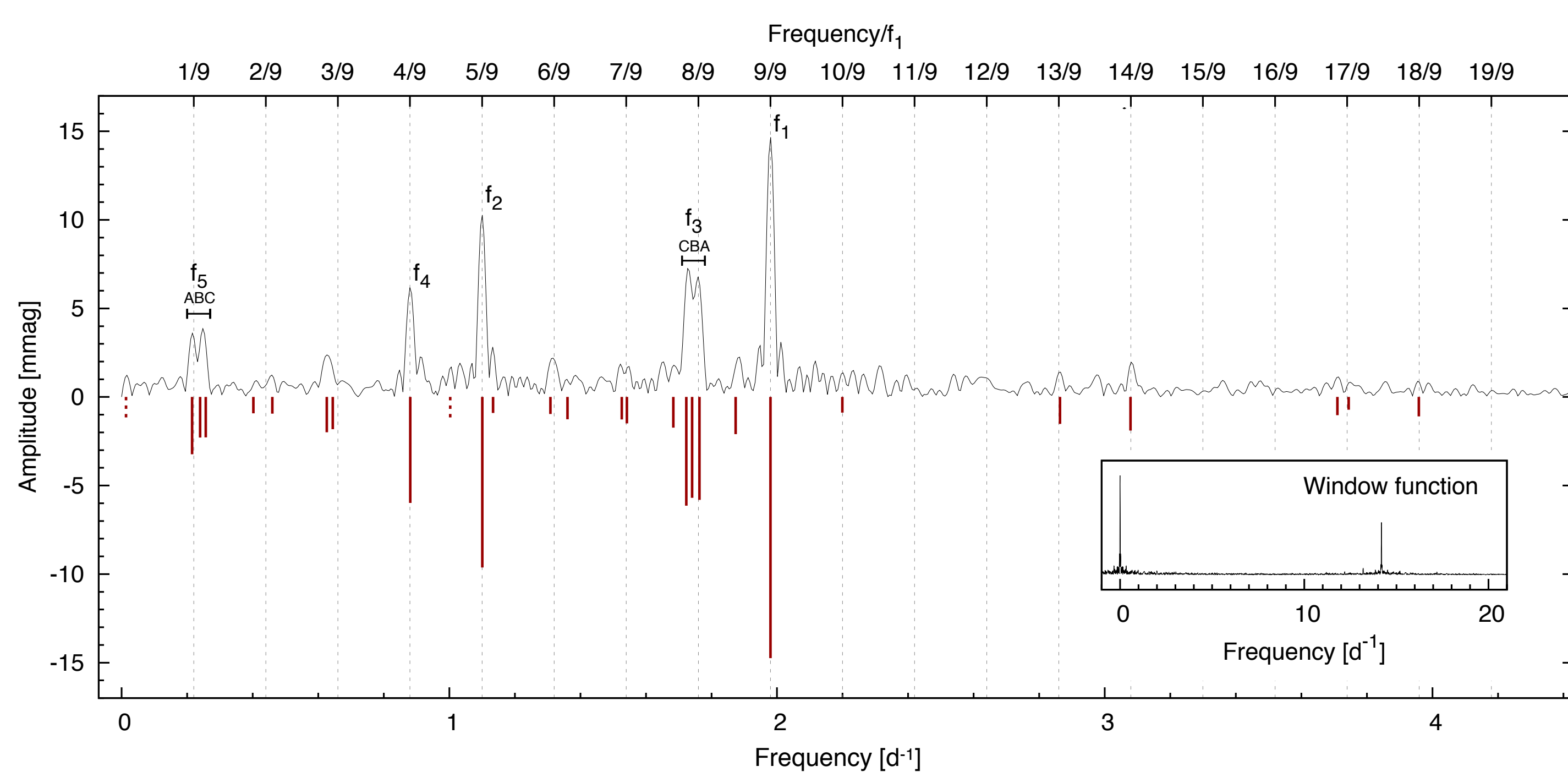
MOST



BRITE



Fourier amplitude spectra



Conclusion

The MOST and BRITE data has similar overall accuracy. Even though the individual BRITE observations are more noisy, the larger number of data points (25 590 BRITE vs. 5370 MOST observations) greatly compensate for it.

Even though earlier ground-based observations and MOST data indicated short time-scale variations in the frequency content of HR 8799, the data from the two spacecrafts show remarkable agreement. The same dominant frequencies were identified within the frequency resolution limit. The stability of some of these (f_1 , f_2), the variability of others (f_3 , f_5), and even their relative amplitudes agree between the two observations taken 8 years apart. Very soon we will have even more space photometric data on this target, since

TESS will observe HR 8799 in 2019.

References

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