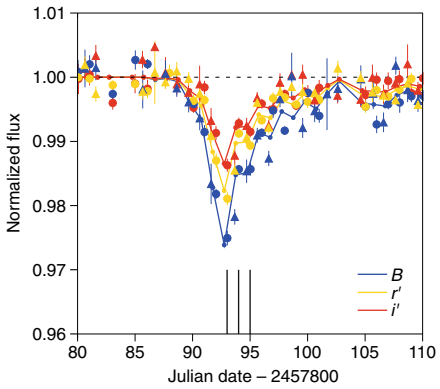
STARS

More dips for Tabby's Star

Astrophys. J. Lett. (in the press); preprint at
https://arxiv.org/abs/1801.00732



Credit: AAS/IOP

Tabetha Boyajian and collaborators (including Kickstarter supporters) have presented the first photometric data of enigmatic variable star KIC 8462852 since the end of the Kepler Space Telescope mission in May 2013. The data show four distinct dips in brightness during 2017 that are consistent with being produced by ordinary circumstellar dust.

KIC 8462852 (also known as Tabby's Star) exhibited irregular and significant dips in brightness over the four-year Kepler lifetime, leading to various suggestions for the occluding body or bodies, including dust clouds, comets or a Dyson swarm-like 'alien megastructure'. The Las Cumbres Observatory Global Telescope (LCOGT) network re-initiated photometric monitoring of the star in March 2016, showing four broad dips in the latter half of 2017, lasting approximately tens of days.

In the paper, which only deals with the first dip, named Elsie, the key observations are the LCOGT *B*, *r′* and *i′* band (436, 622 and 755 nm) photometry (see figure). The offset between these three bands indicates that the occluder cannot be opaque, but rather must be chromatic, as expected for circumstellar dust: the blue dips are about twice as deep as the *i′* band (infrared) dips. Fitting the photometry with a model suggests that the dust must be sub-micron sized and optically thin. Spectra taken during the dip (acquired at the times indicated by the three vertical black lines at the base of the figure) show no indication of gas accompanying the dust.

Despite a somewhat more mundane explanation than alien megastructures, Tabby's Star's dips still hold mysteries: where did this dust come from? Colliding planetesimals or moons? Exocomets? Perhaps we'll have to wait until the dips re-occur (potentially in June 2019) for further clarity.

Paul Woods

Published online: 31 January 2018
https://doi.org/10.1038/s41550-018-0396-1