Abstract Submitted
for the TSF21 Meeting of
The American Physical Society

Lightcurves and Rotational Periods of Five Main Belt Asteroids[1]

HARUM AHMED, KENT MONTGOMERY, MICHAEL CHEEK, Texas AM UniversityCommerce — The lightcurves and rotational periods for five main belt asteroids: 3942 Churivannia: 2.516 0.002 hours, 4673 Bortle: 2.643 0.001 hours, 5186 Donalu: 3.154 0.001 hours, 8441 Lapponica: 3.285 0.001 hours, and 12259 Szukalski: 5.986 0.001 hours are presented in this research. The rotational period of 3942 Churivannia and 12259 Szukalski were determined for the first time and the other three asteroids, 4673 Bortle, 5186 Donalu, and 8441 Lapponica, were observed to improve their previously established periods. The asteroid's apparent magnitude, declination, and opposition date were the criterion used to choose these asteroids. The lightcurves were plotted using photometric data taken over the course of several nights using two telescopes, one was the Texas A&M University-Commerce 0.7-m telescope and the other was the SARA-CT 0.6-m telescope. The photometric data was calibrated, reduced and aligned using different softwares and the average difference in mag. between five comparison stars and each asteroid was found for each image and then plotted versus time, producing a lightcurve. The lightcurves were then analyzed to determine the shape and rotational period of each asteroid.

[1]Research was supported by the Physics and Astronomy REU Program at Texas AM University-Commerce funded by NSF Grant No. 2050277

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Date submitted: 09 Sep 2021 Electronic form version 1.4