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Author: Mr. Mohmmad Talafha
Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates

Prof. Mashhoor Al-Wardat
University of Sharjah, United Arab Emirates
Mr. Ammar Abdulla
Sharjah Academy for Astronomy, Space Sciences and Technology (SAASST), United Arab Emirates
Prof. Hamid M.K. Al-Naimiy
University of Sharjah, United Arab Emirates

OBSERVING DART MISSION IMPACT MOMENT BY SHARJAH OPTICAL OBSERVATORY IN
SUPPORT OF NASA'S DART MISSION

Abstract

Known as Double Asteroid Redirection Test (DART) was NASA's first planetary defense test mission, which reached its target on September 26, 2022. Sharjah Optical Observatory (SOO) (Observatory Code: M47) succeeded in observing this spectacular impact. Such observations were necessary for the visual confirmation of the success the mission. SOO was the only observatory in the northern hemisphere that witnessed the impact moment and record it. With an SBIG 16803 4k X 4k CCD camera attached to the 431 mm reflector CDK telescope, the team of the observatory were able to record the event clearly. The observations faced many difficulties, like the limitation of telescope magnitude, the altitude of the asteroid above the horizon moment of collision and light pollution around the observatory. The MPC - IAU observation report relies on the SOO observational report for the impact moment. We succeeded in recording the asteroid magnitudes pre and post the impact. The brightness of the asteroid pair was around 14 magnitude, and most of it would come from Didymos, the larger of the two. The photometric analysis of the sequence of images shows the suddenly rising in the brightness and magnitude of the asteroid by 2 magnitudes. This was indeed more than what was expected. The result confirms one of the expectations scenarios which were written about the project end its results. We kept observing the asteroid for many nights after the impact to record the fading of the brightness. More details will be discussed in the extended paper.