Future Didymos Observing Strategy

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The binary near-Earth asteroid (65803) Didymos is the target for the Asteroid Impact and Deflection Assessment (AIDA) mission. The DART (Double Asteroid Redirection Test) mission is scheduled to impact the Didymos secondary during its apparition in 2022. One key scientific goal of AIDA is to measure and characterize the deflection caused by the impact. A combination of spacecraft and ground and space based optical and radar observations in 2022 will provide the required data for AIDA to meet its top-level mission goals. We will observe the Didymos system during the 2019 and 2020-2021 apparitions to further characterize the system by obtaining additional lightcurve observations and spectra. These planned observations would provide us with the opportunity to establish the state of the system before impact to a high level of precision. We will place additional constraints on the inclination of the satellite orbit, the long-term effects of Binary YORP (BYORP), and whether the satellite is in synchronous rotation with the primary. The Didymos apparitions in 2019 and 2020-2021 will be much fainter than that in 2022. We anticipate observations at a range of ground and space based facilities. We will discuss: (1) the timing of the two observing campaigns and our plans for each, (2) the improvements to system properties we expect following the two campaigns, and (3) the lessons learned from the 2017 campaign and how to improve for these next two apparitions.