

The Double Asteroid Redirection Test: Summary and Preliminary Observing Plans

A. S. Rivkin¹, C. A. Thomas², and The Dart Investigation Team³

¹ Johns Hopkins Applied Physics Laboratory Laurel MD USA 20723

² Northern Arizona University Flagstaff AZ 86001

³ Various Institutions

contact e-mail: *andy.rivkin@jhuapl.edu*

The Double Asteroid Redirection Test (DART) will be the first space experiment to demonstrate asteroid impact hazard mitigation by using a kinetic impactor. DART is entering the Final Design and Fabrication Phase (“Phase C”), and is part of the Asteroid Impact and Deflection Assessment (AIDA), a joint ESA-NASA cooperative project. The AIDA target is the near-Earth binary asteroid 65803 Didymos, an S-class system that will make a close approach to Earth in fall 2022. The DART spacecraft is designed to impact the secondary of the Didymos system (Didymos B) at 6 km/s and demonstrate the ability to modify its trajectory through momentum transfer. The primary goals of AIDA are: (1) perform a full-scale demonstration of the spacecraft kinetic impact technique for deflection of an asteroid; (2) measure the resulting asteroid deflection, by targeting the secondary member of a binary NEO and measuring the resulting changes of the binary orbit; and (3) study hypervelocity collision effects on an asteroid, validating models for momentum transfer in asteroid impacts.

We will provide an overview of the mission, with a focus on the observations necessary before and after the impact in order to meet our goals, current plans for making those observations, and our anticipated data management plan.