

IAF COMMITTEE ON PLANETARY DEFENSE AND NEAR-EARTH OBJECTS (NEOs)

1. Introduction

Planetary defense is the term used to encompass all the capabilities needed to detect and warn of potential asteroid or comet impacts with Earth, and to prevent and mitigate their possible effects.

A Near-Earth Object (NEO) is an asteroid or comet whose orbit brings it within about 50 million kilometers of Earth's orbit.

The primary objective of the Technical Committee (TC) on Planetary Defense and Near-Earth Objects (NEOs) is to raise awareness among the global space community, in particular the IAC audience, about the ongoing work within the planetary defense community and to get more people, especially students and young professionals, interested and actively participating in the field.

2. Highlights

1. DART

On 24 November 2021, NASA's Double Asteroid Redirect Test (DART) spacecraft launched from Vandenberg Space Force Base on a SpaceX Falcon 9 rocket. Its destination was the non-hazardous, binary asteroid system Didymos to demonstrate the viability of the kinetic impactor – an asteroid deflection technology that works by colliding a spacecraft into an asteroid to give it a push years before it would impact Earth in order to move it sufficiently out of the way. On 26 September 2022 DART successfully hit Didymos' moon, Dimorphos. The impact was observed by several ground and space-based telescopes and continuing measurements of the binary system will allow scientists to compare the actual outcome with the

expected one. In 2024, ESA's Hera mission will launch the same binary asteroid system to measure in detail the effect the impact had on Dimorphos after it arrives in December 2026.

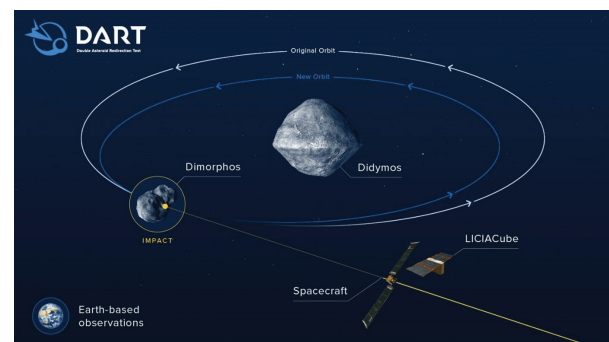


Figure 1- DART kinetic impactor schematic

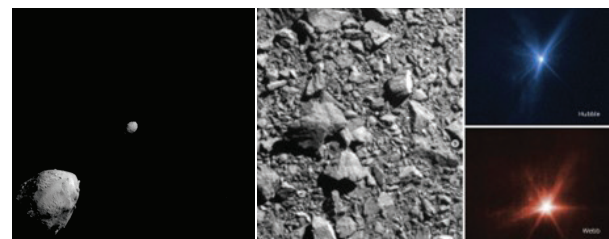


Figure 2- left: DART approach images with Didymos on the left and Dimorphos in the center; middle: last complete image sent by DART before impact; right: observations by Hubble (above) and James Webb (below) Space Telescopes of the impact.

3. Committee activities

Most committee members will participate in the biennial 2023 Planetary Defense Conference (PDC) from April 3-7, 2023 in Vienna. <https://iaaspace.org/pdc>