Summer 2022

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. Latest Developments

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 and is currently on its journey to 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. In this case, DART will hit Didymos' moon, Dimorphos, on 26 September 2022 and will allow scientists to compare the actual outcome with the expected one. Two years later, ESA's Hera mission will launch to the same binary asteroid system to measure in detail the effect the impact had on Dimorphos after it arrives in December 2026.

Figure 1 - Launch of DART

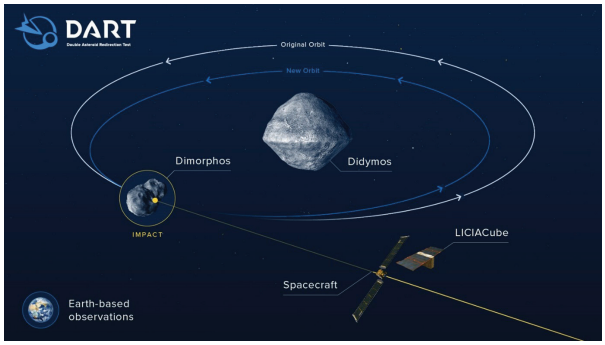

Figure 2- DART kinetic impactor schematic

2. Lucy and Psyche

The Lucy mission was launched on 16 October 2021 from the Kennedy Space Center in Florida. Lucy is a NASA probe that will explore a set of asteroids near Jupiter known as the Trojans. (https://www.nasa.gov/mission_pages/lucy/main/index)

The Psyche mission had been scheduled to launch this summer from the Kennedy Space Center in Florida, but the launch had to be delayed to July 2023. Psyche is a NASA mission to a unique metal-rich asteroid orbiting the Sun between Mars and Jupiter. (https://www.nasa.gov/psyche)

Although neither of these two missions is to a Near-Earth Asteroid, the knowledge gained from both of these missions will aid in our understanding of asteroids and our efforts to prevent future impacts with Earth.

3. Asteroid Day

30 June is Asteroid Day. It is the United Nations-sanctioned day of public awareness of the risks of asteroid impacts. Find an event near you or watch the live broadcast.

https://asteroidday.org/

3. Action plan for the year

The committee is looking forward to a planetary defense packed IAC in Paris.

1. There will be a Plenary "Defending Earth: The International Effort to Protect Us from Asteroids and Comets" organized by APL and supported by the committee about the impact of the DART spacecraft on asteroid Dimorphos in the week after IAC.
2. After successful Special Sessions in 2019 and 2021, the committee will organize again a Special Session in 2022. "The Great Planetary Defense Quiz" will let you participate in a fun quiz while learning about planetary defense.
3. For the first time, the committee is having a dedicated Technical Session about Planetary Defense and Near-Earth Objects, as well as participating in a Joint Technical Session with the Symposium on Space Debris.

Join us and learn more about planetary defense and NEOs!