

**PDC2017  
Tokyo, Japan**

**IAA-PDC-17-05-06**

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**ASTEROID IMPACT MISSION: PERFORMING BINARY ASTEROID  
INVESTIGATION AND SUPPORTING PLANETARY DEFENSE**

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**Keywords:** *Asteroid deflection, binary asteroid, asteroid characterization, technology demonstration*

**ABSTRACT**

The Asteroid Impact Mission (AIM) is a small mission of opportunity for which a Phase A/B1 study was performed at the European Space Agency (ESA), including a so-called consolidation phase in preparation of B2. Its objectives are to explore and demonstrate technologies for future missions while addressing planetary defense and performing asteroid investigations with high science return and relevant information for asteroid mining projects.

AIM is part of an international cooperation between NASA and ESA, consisting of two independent mission elements: the NASA Double Asteroid Redirection Test (DART) mission and the AIM rendezvous mission. The primary goals of AIDA are to test our ability to perform a spacecraft impact on a potentially hazardous near-Earth asteroid and to measure and characterize the deflection caused by the impact. The AIDA target will be the binary asteroid (65803) Didymos, with the deflection experiment to occur in October 2022 when Didymos will be on a close approach to the Earth. The DART impact on the secondary member of the binary asteroid will alter the binary orbit period, which will be measured by both AIM and Earth-based observatories.

The original concept of AIM did not receive full funding but there is still a strong interest by a number of European countries and the community. Therefore a re-scoping exercise is ongoing at ESA and as a result, payload options for a simplified version of the mission have been assessed. The results of this assessment, the impact on the science and mitigation objectives, as well as the status of the payload developments will be presented.

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