

The European Contribution to the Asteroid Impact And Deflection Assessment mission: Hera

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The European component of the AIDA mission has been redesigned and is called Hera hereafter. Hera is a small mission of opportunity built on the previous Asteroid Impact Mission (AIM) concept, whose objectives are to investigate a binary asteroid, to observe the outcome of a kinetic impactor test, and thus to provide extremely valuable information for asteroid impact threat mitigation validating models necessary to design a planetary defence mission. In its current formulation, Hera will be the first mission to carry, deploy, and communicate with an interplanetary 6U CubeSat in the vicinity of a small body, which will perform complementary in-situ spectral observations. The satellite and its CubeSat will also observe for the first time the outcome of a kinetic impact deflection test and drastically improve our understanding of the impact process at asteroid scale, which will serve for the extrapolation to other scenarios. Hera will demonstrate European capabilities to: (1) determine the momentum transfer by the hyper-velocity impact of DART and the resulting effects on Didymoon's surface; (2) carry, deploy and operate a CubeSat in interplanetary space, dedicated for the first time to the spectral characterization of a small body, with a second scientific investigation among radio science, seismology, gravimetry, and volatile detection; (3) perform close-proximity operations in the environment of a binary system and the smallest asteroid ever visited. The knowledge of Didymoon's surface/internal properties and the observation of the DART impact outcome are of high value to address fundamental scientific questions and to support the planning of potential surface activities related to mitigation, resources utilization, or sampling. The presentation will provide a detailed status update and overview of future related activities.