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The Asteroid Framing Cameras onboard HERA and payload operations at close proximity to the Didymos binary asteroid system

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HERA is an ESA mission that, if selected, will be launched towards the Didymos binary asteroid system in 2023 while the NASA's Double Asteroid Redirection Test (DART) spacecraft will impact on Didymos' moon, Didymoon, in 2022. HERA will perform a detailed post DART-impact survey. It aims to characterize physical and dynamical properties of Didymoon including its mass and shape as well as the properties of the impact crater. DART and HERA together are conceived as parts of the international 'Asteroid Impact Deflection Assessment' (AIDA) mission.
The Asteroid Framing Cameras (AFCs) (Sierks at al. 2011), inherited from the Dawn mission, are the optical navigation cameras onboard HERA. Together with a LIDAR and a hyperspectral imager they will be used for proximity operations, as part of the autonomous vision-based GNC system, as well as for scientific purposes.
The trajectories for the asteroid close-proximity operations are defined considering operational restrictions, spacecraft safety and as far as possible scientific objectives. They will also provide the optimal environment to test GNC solutions applicable to active debris removal and in-orbit servicing.
While in the vicinity of Didymoon, HERA will deploy Europe's first deep-space CubeSats, which will provide additional data on Didymoon and its surroundings and allow testing new inter-satellite link technology for future mission architectures. The CubeSats will be placed on close trajectories to Didymoon since they can take greater risks than their mother-ship, thus delivering additional, complementary observations.
We will present the current HERA mission status and the asteroid close-proximity operations strategy, with special focus on planned payload operations with the AFCs.