



LICIACube, the Light Italian CubeSat for Imaging of Asteroid joining NASA DART mission to Didymos binary system

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The “Light Italian CubeSat for Imaging of Asteroid – LICIACube” is a 6U CubeSat of the Italian Space Agency that will operate in conjunction with the NASA “Double Asteroid Redirection Test – DART”, with the main goal to support the Planetary Defense mission objectives by imaging the probe impact effects on the secondary body of the Didymos binary asteroid system. LICIACube will be launched as piggyback of DART spacecraft, then will be separated in proximity of the target and will perform an autonomous fly-by of the binary Didymos system during the final part of the DART mission, collecting pictures of the asteroid and of the generated ejecta plume. The LICIACube design, manufacturing, testing and operation will be implemented by Italian company Argotec, based on the heritage gained in the development of the ArgoMoon CubeSat. An important contribution is provided by the scientific community, in particular by the INAF team supporting the remote sensing performance achievement and the data analysis, by the Politecnico di Milano group performing the mission analysis and guidance design and by the University of Bologna, setting up the orbit determination process and radio science measurements. The Phase B in progress activities, carried out in strong coordination with the DART team of JHU Applied Physics Laboratory (APL), are mainly focused on the mission and trajectories analysis, in order to optimize the observation conditions with respect to the on board resources and mission objectives. The operational scenario is discussed and agreed with the APL team, together with the interfaces between the DART spacecraft and LICIACube. Moreover, the payload and platform design is under consolidation and the subsystem expected performances identified and translated into design requirements. Ground support to the mission will be provided by DSN, but ASI will also maximize the involvement of its own radio tracking facility, the Sardinia Deep Space Antenna, currently being upgraded to enhance its TT&C capabilities.

This talk will give an overview of the LICIACube project status, achievements and expected mission results in the challenging deep space scenario.