Hera Community Workshop
April 24-26th, 2024

Science Operations Working Group meeting
24 April 2024
ESTEC, tennis hall (Escape building)

09:00 Introduction (M. Küppers)
09:05 Hera CMOC update (J. Coheur)
09:15 Cubesats Flight Dynamics and Science Operation Center update (P. Annat)
09:25 Hera SPICE and Cosmographia update (A. Escalante)
09:35 Hera Scientific payload calibration update (G. Kovacs)
09:45 Provenance/3D GIS update (G. Paar)
10:00 Hera Mission Operations Centre Update and status of cruise phase planning (S. Lodiot)
10:45 Coffee Break

Cruise phase operations planning
Instrument readiness for cruise operations (Cruise phase operations plan (spreadsheet), Interface with ESOC for data downlink, data processing status/plans, critical points)

11:15 AFC (J.-B. Vincent)
11:45 Hyperscout-(J. de León, M. Popescu)
12:15 TIRI (T. Okada)
12:45 Lidar (P. Gordo)
13:15 Radio science plans for cruise (P. Tortora)

13:30 Lunch break

14:45 Mars flyby (S. Sugita, all)
15:00 Open points for cruise phase operations

Hera Trajectories and Asteroid Phase planning

15:30 Update of Hera trajectories and of asteroid phase planning (S. Lodiot, P. Muñoz)
16:00 Status of plans for high-level product creation (WG 4 chairs, task leads)
Coffee break during the block
18:00 Adjourn

Community Meeting
ESTEC, meeting room Newton (main building)
25 April

Session 1: Hera Spacecraft, Payload, and Science status

09:30 Introduction, Logistics (M. Küppers)
09:40 Hera status (I. Carnelli)
10:10 Hera Science update (P. Michel)
10:30 AFC update (J.-B. Vincent)

10:40 Hyperscout update (J. de Leon)
10:50 TIRI update (T. Okada)

11:00 Coffee Break
11:30 Lidar update (P. Gordo)
11:40 RSE update (P. Tortora)
11:50 Milani update (M. Cardi, T. Kohout, E. Palomba, F. Ferrari)
12:05 Juventas update (O. Karatekin, A. Herique)

Session 2: Ground-based observations (WG 2)
12:20 Current Dimorphos orbit models (P. Scheirich)
12:35 Rotational lightcurves of Dimorphos and constraints on its post-DART impact spin state (P. Pravec)
12:50 Lightcurve observations plans for June and August (A. Rozek)
13:05 Planned observations of stellar occultations by the Didymos-Dimorphos systems in 2024 (M. Tsiganis)

13:20 Lunch

Session 3 : Impact modeling and experiments (WG 1)
14:30 Introduction (K. Wünnemann)
14:35 Ejecta depostion on Dimorphos after the DART impact (K. Kurosawa)
14:50 Impact experiments at TUM (D. Koschny)
15:05 Impact Experiments and Model Validation in the frame of the Hera mission (R. Luther, J. Ormö)
15:25 New versus past silica crush curve experiments: applied to Dimorphos benchmarking impact simulations (U. Malamud)
15:40 Coffee break
16:10 Shock-induced spectral changes of the feldspars: An implication for the Hyperscout-2 hyperspectral imaging system of the ESA Hera mission (A. Gucsik)
16:25 SPH Simulations of Boulder Disruptions: From Laboratory Scale Impacts to Asteroids (P. Della Moglie)
16:40 Lessons learned from the DART impact about disrupting rubble-pile asteroids and about forming satellites (S. Raducan)
16:55 Discussion
17:05 Adjourn

18:00 Cocktail dinner at ESTEC

26 April

Session 4: Data analysis, exploitation and interpretation (WG 4)
09:00 Introduction to WG4 session (WG4 chairs)
09:10 Cruise phase operations: short update (Ö. Karatekin)

Sub-session 1: Mass of Dimorphos and dynamical properties of the system (chairs: P. Tortora & Ö. Karatekin)

09:20 Overview of current status of data analysis preparation for mass, gravity field, and dynamical properties of the Didymos system (Ö. Karatekin)

09:40 Open discussion

Sub-session 2: Global properties, interior structure (chair: A. Herique)

09:50 Overview of shape changes due to DART impact (S. Raducan)

10:00 Overview of current status of data analysis preparation for shape and internal structure & discussion (A. Herique)

10:10 Coffee break (30 min)

Sub-session 3: Characterisation of the surface properties (chairs: JB. Vincent & N. Murdoch)

10:40 Overview of current knowledge of geomorphological and mechanical properties of Didymos and Dimorphos (N. Murdoch and JB. Vincent)

11:00 Experimental determination of bearing capacity + boulder segmentation update (A. Duchene)

11:10 Boulder lithology classification of Dimorphos (M. Pajola & F. Tusberti)

11:20 Plans for HERA regarding thermal fatigue and mass wasting observations (A. Lucchetti)

11:30 Status of the thermophysical model comparisons (Ö. Karatekin)

11:40 Identification of key spectral range and minimum wavelength step for reliable composition and space weathering detection (T. Kohout)

11:50 Laboratory spectra of meteorites obtained using Hyperscout-H (M. Popescu & G. Prodan)

12:00 The search for meteorite analogue for Dimorphos using infrared spectroscopy (S. Cooreman)

12:10 Open discussion, open questions after DART? (chair: JB. Vincent)

12:40 Lunch

Session 5: Dynamics and physical properties modeling (WG 3)

Topic: Dynamics in the environment of the Didymos system (S. Charnoz)

14:00 Dust dynamics in the system (S. Soldini)

14:25 Motion of ejected boulders/re-impacts (K. Langener, F. Moreno)

14:45 Questions and discussion

Topic: Post-impact evolution of the Didymos system (M. Tsiganis)

15:00 Rotational state of Dimorphos and tidal evolution of the system (H. Agrusa, M. Tsiganis)

15:20 Rotational and translational state estimation with the F2BP (R. Lasagni, E. Manghi)

15:30 Questions and Discussions

15:45 Coffee break

Topic: Internal structure of Didymos and Dimorphos (A. Campo Bagatin)

16:00 The formation of Dimorphos (S. Charnoz, J. Wimarsson, P.-Y. Liu)

16:30 Questions and discussion

16:45 AOB, Next meeting

17:00 End of meeting