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INNOVATIVE AND SYNERGETIC DATA-ANALYSIS STRATEGIES FOR SMALL BODIES: A NEO-MAPP CONTRIBUTION

Naomi Murdoch[1], Alain Herique[2], Ozgur Karatekin[3], Paolo Tortora[4], Kleomenis Tsiganis[5], Jean-Baptiste Vincent[6], Patrick Michel[7] and the NEO-MAPP Team

[1]ISAE-SUPAERO, 10 ave E. Belin, 31400 Toulouse, France, naomi.murdoch@isae.fr
[2]Université Grenoble Alpes, UGA, Grenoble, France
[3]Royal Observatory of Belgium, Brussels, Belgique
[4]University of Bologna, Bologna, Italy
[5]Aristotle University of Thessaloniki, Thessaloniki, Greece
[6]Deutsches Zentrum Fuer Luft -Und Raumfahrt E.V. – DLR, Berlin, Germany
[7]Université Côte d'Azur, Observatoire de la Côte d'Azur, CNRS, Laboratoire Lagrange, CS 34229, 06304 Nice Cedex 4, France, michelp@oca.eu

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ABSTRACT

A key objective of the NEO-MAPP project (see Michel et al., this conference) is to develop innovative and synergetic measurement and data-analysis strategies that combine multiple payloads in order to maximize the exploitation of scientific and technical data, increase the scientific return of future asteroid space missions, and improve our understanding of NEOs. In line with this objective, the NEO-MAPP team has identified key data products as being critical for the success of future planetary

defence space missions and for improving our understanding of NEOs: orbit determination, dynamical state, gravity field, shape, internal structure, mechanical properties, and thermal properties.

The NEO-MAPP team will first develop new single-instrument based data processing techniques that are required to produce the key data products. Then novel multi-instrument approaches to data analysis will be defined and developed in order to retrieve and improve the quality of the data product. It is anticipated that the close collaborations between the different instrument teams and the breadth of data processing expertise in the NEO-MAPP consortium will lead to new approaches based on multi-instrument techniques.

In this presentation we will outline our strategy for developing the new co-processing tools. We will also present the instruments the NEO-MAPP team plan to consider as contributing to the key data products and the expected inter-dependencies of the data products.

The first application of this activity will be the ESA Hera mission to the binary asteroid Didymos that will contribute to the first deflection test with the NASA DART mission, and provide first internal structure measurements of an asteroid.

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