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Presentation Abstract

Title **The KOALA Shape Modeling Technique Validated at (21) Lutetia by ESA Rosetta Mission**

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Abstract We recently developed a shape reconstruction algorithm, dubbed KOALA (Kaasalainen, IPI 2010; Carry et al., Icarus 2010), which allows the determination of the size, shape, and spin properties of asteroids from a combined data set of disk-resolved images, optical lightcurves, and stellar occultations.

Using adaptive optics (AO) imaging systems on the Keck and VLT telescopes, we acquired more than 300 images of the main-belt asteroid (21) Lutetia in 2007 and 2008. We combined these images with 50 lightcurves spanning some 48 years and including data taken almost up until the time of flyby. We produced a 3D shape model of Lutetia and determined the spin pole and rotation rate (Carry et al., submitted to A&A).

On 2010 July 10, the International Rosetta Mission of the European Space Agency successfully encountered (21) Lutetia. The images recorded by the OSIRIS camera on-board Rosetta revealed our shape prediction to be accurate. We will present the KOALA (Knitted Occultation, Adaptive-optics, and Lightcurve Analysis) method, and a comparison of our shape model with the high-resolution images acquired by Rosetta during the flyby.