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Ground-based observations of asteroid 21 Lutetia: a critical view after the Rosetta fly-by

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Asteroid 21 Lutetia has a long history of ground-based observations by different techniques since 1962 when the first Lutetia's lightcurve was measured. Results of photometric, polarimetric, radiometric, spectral and radar observations provided a rather consistent picture of the main physical and optical properties of the asteroid before the Rosetta fly-by (see e.g. [1]). Heterogeneous surface properties and a large crater in the northern hemisphere found during the fly-by of ESA's Rosetta spacecraft [2] were successfully predicted from the analysis of the ground-based observations [1,3].

Here we performed new analysis of the available ground-based data taking into account our knowledge after Lutetia's investigation by the Rosetta spacecraft. The main aims of this approach are (i) to find additional constraints helping in understanding surface composition of Lutetia, and (ii) to learn more about the southern atmosphere of Lutetia not visible during the fly-by. Some problems in comparison of space, ground-based and laboratory data will be discussed, in particular concerning estimations of the geometric albedo.

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[2] Keller, H., Barbieri, C., Koschny, D., et al.: Imaging Asteroid (21) Lutetia with OSIRIS onboard Rosetta. American Geophysical Union, Fall Meeting 2010, #P14B-02.

[3] Carvano, J. M., Barucci, M. A., Delbo, M., et al.: Surface properties of Rosetta's targets (21) Lutetia and (2867) Steins from ESO observations, Astron. Astroph. 479, 241, 2008.