



## A diamond in the sky: an exclusion or normal situation?

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The September 2008 observation and imaging by the ESA-“Rosetta” spacecraft of the small asteroid (2867) Steins should have a rather deep impact at planetological thinking. The planetology community is accustomed to think that the only process making forms of small bodies is the impact (accretion) process. No other forces are considered as though there is none. But actually there is one mighty process – a wave process that affects all cosmic bodies by warping them in several (normally four) directions. An origin of these warping waves is quite simple. All cosmic bodies move (orbit) and rotate. After I. Kepler we know that all orbits are non-round but elliptical (time rounds them but ellipticity always remain), and this means that orbiting bodies periodically cyclically change their accelerations (speeding up and slowing down). Multiplied by masses these changes produce forces applied to the bodies and causing oscillations of their spheres. In rotating bodies (but all bodies rotate!) these oscillations are decomposed (split) into four orthogonal and diagonal directions. Interfering of these directions produces uplifting, subsiding and neutral tectonic blocks which are observed on any celestial body more or less clearly. The blocks dimensions depend on lengths of warping waves that acquire a stationary character in closed spheres. That is why celestial spheres are not like billiards-balls but consist of regularly placed depressions (lowlands) and highlands.

The longest fundamental wave 1 produces ubiquitous tectonic dichotomy – an opposition of subsided and bulged hemispheres (segments). The Plato’s tetrahedron is a structural expression of this configuration: in this simplest polyhedron there is an opposition of a vertex (bulging, extension) and a face (pressing in, contraction). A convexo-concave shape of small bodies is very typical [1]; in some viewpoints they look as tetrahedrons [2]. The first overtone of the fundamental wave – wave 2 – produces structural octahedron (diamond). Rarely in a full shape, more often in its parts {rectilinear crossing outlines} this shape is rather typical in many obtained images of small bodies [3]. Not perfection of this polyhedron in reality is due to its superposition on a tetrahedron structure and complication by wave structures of the lower ranges, like a cube, dodecahedron, and impacts. Still, in some cases “diamond” in the sky is rather clear – Yanus (PIA 06613), Steins. Dr. Schwehm’s prediction of even larger asteroid “diamond” in shape of Lutetia is really significant [4]. If small bodies are able to demonstrate their natural polyhedron shapes due to negligible gravity, the larger bodies are reduced to a globe shape by a mighty gravity. Still their structural layout (ubiquitous dichotomy), some protruding vertices, edges and faces betray their polyhedron nature. In this relation, “mysterious” Saturn’s northern hexagon is a reflection of three crossing tetrahedron faces making the fourth face, while the southern hurricane is an imprint of an opposite vertex. Thus looks a hidden polyhedron in a globe. ESA-Rosetta mission is a real clue to an adequate understanding, deciphering forces sculpturing celestial bodies. Images of asteroid Steins revealing its clear polyhedron (diamond) shape witness to an involvement of warping wave processes.

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