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Is the saturnian hexagon a unique feature in the Saturn's system?

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An answer is: not at all. Look at Odysseus Crater on Tethys, Gershel Crater on Mimas (Fig. 1, 2) and some other hexagonal craters on icy satellites [1]. All them have two important peculiarities. They are more or less hexagonal in outlines and have nearly the same relative size to their globes as the famous saturnian hexagon to the Saturn's body [1]. This relationship hardly could happen if these hexagons were traces of random impacts. A more acceptable explanation is based on a consideration of these regular features as traces of an interference of warping waves of four directions. These waves arise in any celestial body moving in non-circular keplerian orbits with changing accelerations. They have a stationary character and acquire in rotating bodies four interfering directions (ortho- and diagonal) producing uplifting, subsiding and neutral tectonic blocks [2 & others]. Sizes of these blocks depend on warping wavelengths.

The longest and most amplitudinal fundamental waves1 long $2\pi R$ produce universal tectonic dichotomy that is an opposition of an uplifted segment (hemisphere) and a subsided one. A crystallographic expression of this dichotomous nature is the simplest Plato's polyhedron – a tetrahedron (Fig. 4) hidden in large spherical bodies but rather well represented in small bodies (less than 200 to 400 km in diameter) with small gravity. Small bodies (satellites and asteroids) normally have a convexo-concave shape [3]. The sharpened convex uplifted hemisphere is an expression of a tetrahedron's vertex; the flattened concave subsided hemisphere is an expression of a tetrahedron's facet (Fig. 4).

The famous saturnian North Pole hexagon is formed by an intersection of three facets of a hidden tetrahedron structure. The opposing smaller South Pole hurricane represents a vertex (Fig. 3). This crystallography can be found in the Saturn's satellites [1]. One example is Tethys with famous hexagonal structure of Odysseus Crater and nearly antipodean smaller Melanthius crater (Fig. 1).

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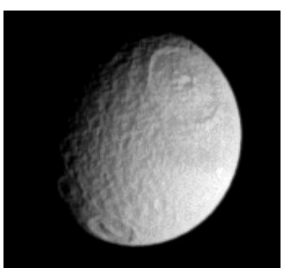

Fig. 1. Tethys with Odysseus and Melanthius Craters, PIA07622

Fig. 2. Mimas with Hershel Crater, PIA09811

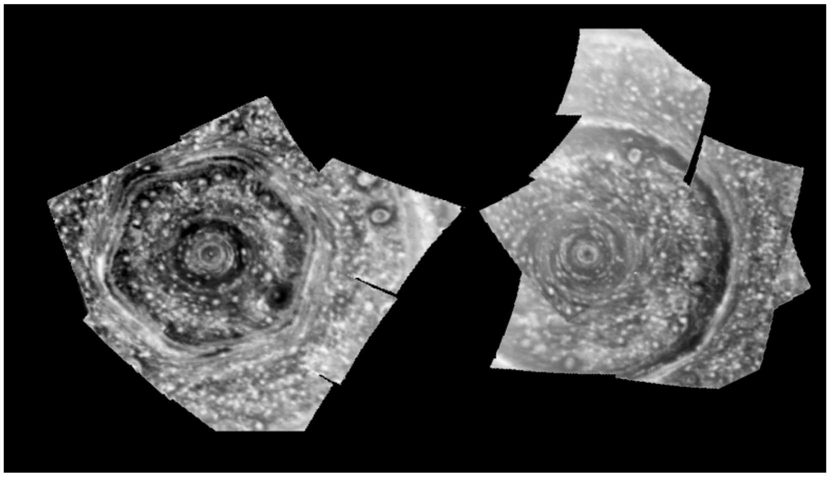

Fig. 3. Saturn: North Pole hexagon & South Pole hurricane, PIA11216

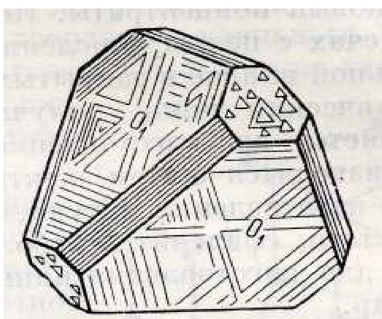

Fig. 4. Tetrahedron crystal with a face opposing a vertex (sphalerite, ZnS).

References: **[1]** Kochemasov G.G. (2009) The new wave planetology: origin of Plato's polyhedra and hexagons in the Solar system // Vernadsky-Brown microsymposium 50 on comparative planetology, Vernadsky Inst. (GEOKHI), Moscow, Russia, Oct. 12-14, 2009, abstract m50_33, USB disk. **[2]** Kochemasov G. G. (1998) Tectonic dichotomy, sectoring and granulation of Earth and other celestial bodies // Proceedings of international symposium on new concepts in global tectonics ('98 TSUKUBA)", Tsukuba, Japan, Nov. 1998, p.144-147. **[3]** Kochemasov G.G. (1999) On convexo-concave shape of small celestial bodies // "Asteroids, Comets, Meteors", Cornell Univ., July 26-30, 1999, Abstr. # 24.22. .