



Saturnian north polar region: a triangle inside the hexagon?

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The famous and “mysterious” stable hexagon structure around the North Pole of Saturn was earlier interpreted as projections of faces of a structural tetrahedron [1]. This “hidden” simplest Plato’s polyhedron is a result of an interference of four fundamental (wave 1) warping waves having in any rotating celestial body four directions: orthogonal and diagonal. Origin of the warping waves in any celestial body is due to their movements in elliptical keplerian orbits with periodically changing accelerations. The structural tetrahedron is an intrinsic geometric feature marking the celestial bodies ubiquitous tectonic dichotomy as in a tetrahedron always there is an opposition of a face (expansion) and a vertex (contraction). In the saturnian case the tetrahedron shows a face at the north and a vertex at the south. Morphologically this is manifested by the hexagon and opposing it in the south a vertex. Blue and pink hues of the northern and southern hemispheres also underline the tectonic dichotomy. These geometric expressions are enforced by a subtle dark equilateral triangle appearing in the image PIA11682 also around the north pole and inside the hexagon (the triangle side is about 15000 km long). One angle of the triangle is clearly visible, another one just shows itself and the third one is barely distinguished. The sides of the triangle are not straight lines but slightly broken amidst lines what makes the triangle appear a bit hexagonal (spherical) and the angle is a bit bigger than 60 degrees of a classical equilateral triangle (~70 degrees). The central part of the triangle is not imaged (a black hole in the PIA11682). This image also confirms that the wide northern polar region is also densely “peppered” with bright cloudy more or less isometric spots on average 400 to 800 km across as in other latitudinal belts of Saturn [2, 3, 4]. Earlier they were observed in IR wavelengths, now they show themselves in visible wavelengths. Their origin and size were interpreted as interference wave features of modulated atmospheric inertia-gravity waves [2, 3]. It seems, as it was mentioned before, that the “leopard” spots in the north are slightly larger than those in the south [3, 4]. This observation confirms the north-south dichotomy of Saturn with expanding northern hemisphere. Finally, very distinctive wave features of this giant gas planet (often geometrically regular) are probably due to its comparatively high eccentricity exciting important warping waves in its body. References: [1] Kochemasov G.G. (2007a) Dichotomous Saturn in infrared images: huge northern hexagon against smaller southern hurricane // ERSC Abstracts, Vol. 2, EPSC2007-A-00015, 2007. [2] Kochemasov G.G. (2007b) Calculating size of the Saturn’s “leopard skin” spots // Lunar and Planetary Science Conference XXXVIII, Abstract #1040, CD-ROM. [3] Kochemasov G.G (2007c) Saturn’s infrared spots at the southern and northern polar regions and calculation of their sizes by a wave modulation procedure // ERSC Abstracts, Vol. 2, EPSC2007-A-00017, 2007. [4] Kochemasov G.G. (2008) Systematic not random “peppering” saturnian surface by the IR round clouds: wave features with predictable size // European Geosciences Union General Assembly, 2008, Vienna, Austria, 13-18 April 2008, Abstracts, EGU2008-A-01274, CD-ROM.