

Stickney crater on Phobos and some other outstanding planetary depressions as features of crustal wave interference origin.  
G.G. Kochemasov

Some not fully understood (enigmatic) large planetary depressions and geoid minima on planets and satellites are better understood as regular wave woven features, not random large impacts [1]. A main reason for this is their similar tectonic position in a regular sectoral network produced by interfering crossing standing waves warping any celestial body. These waves arise in the bodies due to their movements in keplerian elliptical orbits with changing accelerations. The fundamental wave1 produces universal tectonic dichotomy, its first overtone wave2 superposes on it sectoring – a regular network of risen and fallen blocks [2, 3]. Thus, deeply subsided sectoral blocks are formed on uplifted highland segments -hemispheres [1]. Examples of this pattern are shown in Fig. 1 to 8 on various globes and irregular bodies. The Moon – the SPA basin, Earth – Indian geoid minimum, Phobos – Stickney Crater, Miranda – an ovoid, Phoebe – a sector, Mars – Hellas Planitia, Lutetia – a deep sector indentation. Fig. 9 – a geometrical model of dichotomy and sectors formation by wave interference.

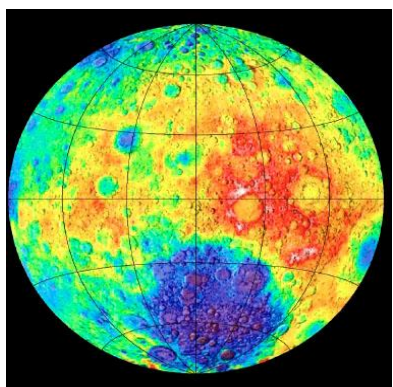


Fig. 1. Moon -moontopogeidusgs\_farside.jpg

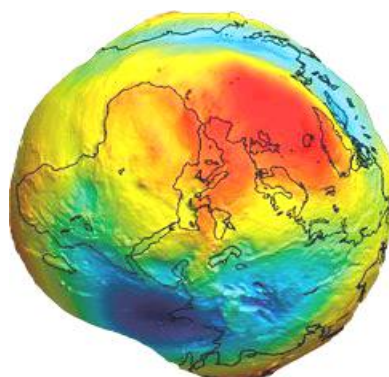


Fig. 2. Earth -832e41812d1e.jpg

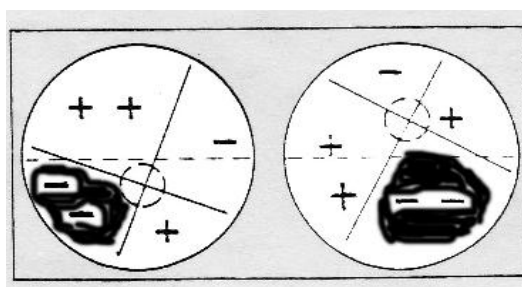


Fig. 3. Schematic tectonic position of the SPA basin (to the left) and the Indian geoid minimum (to the right) on continental segments of the Moon and Earth. “+,+,-,-” show differently uplifted and subsided sectors around Mare Orientale and the Pamirs-Hindukush. The deepest geoid minima on the Moon (SPA basin) and Earth (the Indian minimum) are blackened..



Fig. 4. Phobos - PIA10368.jpg

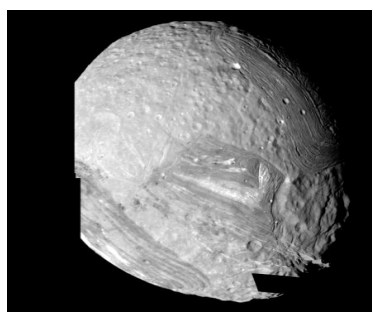
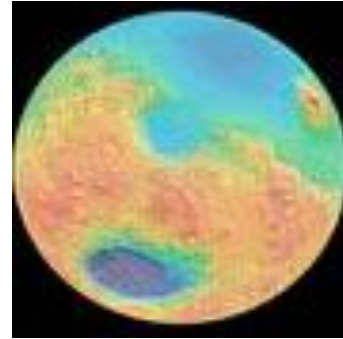


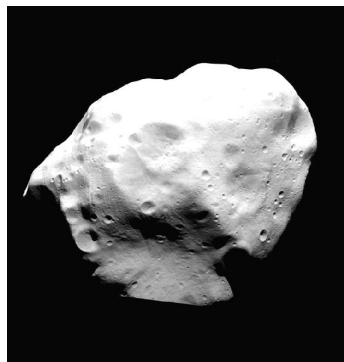
Fig. 5. Miranda - PIA00043.jpg



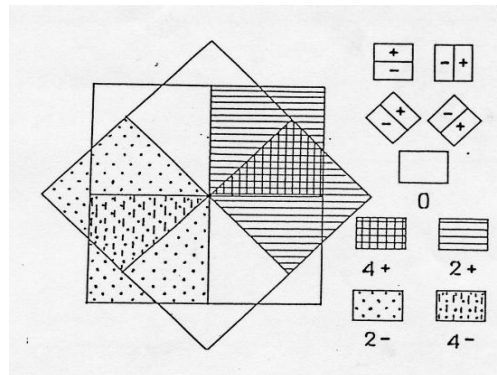
**Fig. 6.** Phoebe - (190-200-1.jpg)



**Fig. 7.** Mars - 180pxPIA0282



**Fig. 8.** Lutetia – ESA 2010 MPS for OSIRIS Team, MPS/UPD/LAM/ IAA/RSSD/INTA/UPM/DASP/IDA



**Fig. 9.** Graphical presentation of sectors and dichotomy formation by interference of quantum-mechanical waves (+ or -) of 4 directions.

**References:** [1] Kochemasov G.G. (2010) Well known outstanding geoid and relief depressions as regular wave woven features on Earth (Indian geoid minimum), Moon (SPA basin), Phobos (Stickney crater), and Miranda (an ovoid) // EGU Congress, Vienna, 2010, Vol. 12, EGU2010-A-4044. [2] Kochemasov G. (1999) Theorems of wave planetary tectonics // Geophys. Res. Abstr., V.1, #3, 700. [3] Kochemasov G.G. (1998) The Moon: Earth-type sectoral tectonics, relief and relevant chemical features // The 3<sup>rd</sup> International Conference on Exploration and Utilization of the Moon, Oct. 11-14, 1998, Moscow, Russia, Abstracts, p. 29.