



Cote's Spiral in Neptune Great Dark Spot

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Gas giants in the Solar System, such as Jupiter, Saturn, Uranus and Neptune, present large storm cyclones. These cyclones, storm vortex, are apparently formed by the differences between temperature, density, rotation speeds of gaseous/liquid fluid flows and their structural and chemical compositions, studied via telescopes on Earth, or by probes sent to the planets. The duration of these cyclones, vortex, are uncertain. From weeks to hundreds of years, from the first observations described and found throughout history. Highlighted by Neptune's Great Dark Spot (GDS) with planetary dimensions, like the GDS was captured by NASA's Voyager 2 space probe in Neptune's southern hemisphere. The dark, elliptically shaped spot (with initial dimensions of 13,000 × 6,600 km, or 8,100 × 4,100 mi of GDS was about the same size as Earth, and was similar in general appearance to Jupiter's Great Red Spot [1].

In mathematics, a spiral is a curve, which emanates from a point, moving farther away as it revolves around the point. The characteristic shape of hurricanes, cyclones, typhoons is a spiral. The characteristic equation of which spiral the Cyclone its double spiral shape, whose mathematical equation has already been defined as Cote's spiral, Gobato, et al. [2] and similarly Lindblad B [3] show shape of double spiral galaxies [4-12]. In physics and in the mathematics of plane curves, a Cotes's is one of a family of spirals classified by Roger Cotes.

The image captured by Voyager 2, the GDS presents a characteristic that resembles a Cote's Spiral. Its ellipsoidal shape is due to the rotation of the different planetary rotation layers in opposite directions, increasing and compressing the GDS, from the lower to upper layers of Neptune's atmosphere [1,12] (Figure 1).

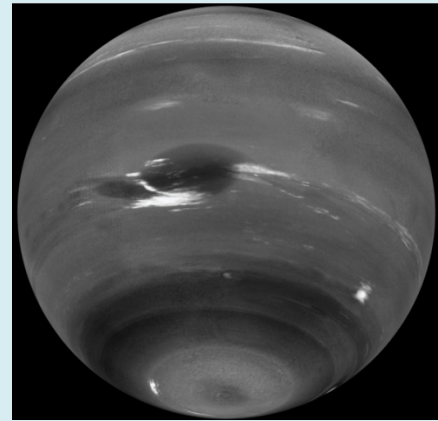


Figure 1: Image of Neptune, obtained by Voyager 2, in August 1999. Source: NASA/JPL [12].

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