# Impact of Solar Inertial Motion (SIM) in the Existence of Planet 9 

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## DESCRIPTION

If a small planet orbits at a relatively wide distance from the Sun, the Sun's orbital motion would be subject to enormous change. This study evaluates whether the Planet 9 hypothesis the idea that there is a ninth planet is in line with the planetary theory, which holds that sunspot emergence is synchronized with Solar Inertial Motion (SIM) brought on by the planets. If Planet 9 occurs, SIM would be significantly impacted and that the predicted impact of SIM on sunspot emergence would be very different from the impact of SIM owing to the existing eight planets [1]. They compare the Sun to barycenter distance, RB, determined for both the eight and nine planet systems, and its frequency and time variation. With the variation in Sun Spot Number's (SSN) frequency and timing. They demonstrate that incorporating Planet 9 enhances RB and SSN coherence in the decadal, centennial, and millennial time scales [2].

Additionally, because the longitude and period of Planet 9 have an impact on the variation of RB, it is possible to change both of these factors to better fit the fluctuation of RB to the SSN record and to estimate the period and current longitude of Planet 9. Last but not least, They propose the theory that planetary-induced solar acceleration decreases meridional flow and, as a result, sunspot development, explaining the observed connection of grand solar minima with intervals of high solar acceleration. Observations that suggested an unidentified planet was interfering with Uranus' orbit in 1846 helped scientists find Neptune [3]. After Neptune was directly sighted, subsequent calculations based on the perturbations gave an estimate of its position in the sky. A ninth planet, much farther out than Neptune, may exist and be causing the orbits of many Kuiper Belt objects to be disturbed, according to recent scientific studies of their orbits.

Calculations have estimated the mass, semi-major axis, eccentricity, and inclination of the hypothesized planet known as Planet 9, based on the objects' apparent clustering around their
perihelion longitude. A clue that the planet is now near Orion's Shield, as well as its current location. Planet 9 has not been seen firsthand, and the idea that it exists is debatable [4]. The lack of direct observation is a result of how challenging it is to use current telescopes to observe a planet that is so far away. The contention, however, mostly stems from the fact that the theory depends on the grouping in perihelion longitude of just six objects out of a considerably larger population of objects and may be the consequence of selection bias. The only other evidence seems to be a trend in Pluto's apparent declination during the past 20 years, aside from this clustering in longitude of perihelion of a few objects [5].

The trend, however, favors a planet that is either closer or more massive than the planet proposed by or evens another planet that is closer to Pluto in addition to Planet 9; this outcome has the tendency to enhance rather than lessen the debate. It is obvious that additional supporting evidence would be helpful given the continued lack of firsthand observation.

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