

Offered Title: Planet X, or IX?

Pluto isn't a planet. That might change but the real excitement now is an outer solar system disturbance some are calling planet X. Some call it planet nine.

Things are getting interesting beyond Pluto and the rest of the Kuiper belt. To refresh your memory, the Kuiper belt is a ring of objects just beyond Neptune orbiting our Sun. Neptune is 30 times farther from the Sun than Earth (the Earth – Sun distance is termed one astronomical unit or 1AU). Pluto is considered the closest Kuiper belt object, its orbit ranges from 30 – 49 AU while the Kuiper belt is 30 – 55 AU deep. That's far out but the real excitement appears to be happening hundreds of AU from the Sun.

So, what's the exciting disturbance? Astronomers have been monitoring the orbits of a group of Trans Neptunian Objects (TNO) whose highly elliptical orbits take them from within the Kuiper belt to well beyond it. Well, their orbits are stable, but they do not have enough mass to maintain their own orbit configurations. Something is shepherding them and apparently it's pretty big.

It needs to be a planet, maybe as big as Neptune, or maybe a few times as big as the Earth. Either way, the object needs to be massive and that's exciting! It's exciting because a new planet might be discovered and it's exciting because the definition of planet might change as a result. Maybe there's hope for Pluto.

The disturbances astronomers have recorded might involve the known planets as well.

The known planets' orbits around the Sun are inclined by 6° relative to the Sun's equator. Astronomers don't know why, but a large planet beyond the Kuiper belt can explain this.

Getting back to the outer solar system...it's tricky business. Instruments need to be sensitive and accurate because the objects under study are so far away and faint. Fortunately, there are instruments up to the task such as the Dark Energy camera equipped Blanco 4-meter telescope in Chile, the Magellan Baade 6.5-meter telescope, also in Chile, and the 8.2-meter Subaru telescope in Hawai'i. Knowing that something is holding these outer solar system objects orbits together is a start. Now the race is on. Several teams of astronomers are lining up time on these and other great telescopes, hoping their predictions of where and when to look for planet X are the correct ones. The estimated brightness of this hypothetical object is 23rd to 25th magnitude, making it doable with the 4-meter scope but easier with the 6.5 or 8.2-meter scopes.

Where and when will the teams be looking? They're betting on an area between Orion and Cetus and have just begun surveying. Keep tuned.

What's in the Sky?

Look to the southwest after dark and find the Sagittarius Tea Pot asterism just above the horizon. Scan above and around the lid with binoculars, this is toward our galaxy's center. It's a great view.