New planet record suggests our solar system is normal

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Space
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It's a shame about Pluto. If it still counted as a planet, our sun would still be among the record-holders in the planet stakes.

Instead, that crown may have just been stolen by HD 10180, a star 130 light years away that has mass, temperature, brightness and chemistry similar to the sun. A new report sees evidence for up to nine planets in HD 10180's family, all of which are more massive than the Earth. The finding is one of two suggesting our solar system may not be as weird as we thought.

After our sun, we used to think the stars with the most planets were Kepler-11 and HD 10180:, each appeared to have six orbiting worlds. Then Mikko Tuomi, an astronomer at the University of Hertfordshire, UK, re-examined observations of HD 10180 from the HARPS (High Accuracy Radial velocity Planet Searcher) spectrograph at the La Silla observatory in Chile. He confirmed the presence of a suspected seventh planet and found new evidence of two more, which would bring the total up to nine.

The suggestion that other solar systems have similar numbers of planets to our own fits with growing evidence that ours is not as freakish as earlier evidence suggested.

The early days of exoplanet hunting mostly turned up bizarre and exotic beasts like hot Jupiters, behemoths many times larger than Jupiter that orbit scorchingly close to their stars, often in single-planet families. Sometimes their orbits were askance, titled at crazy angles with respect to the star's axis of rotation.

The new zoo of planets threw doubt on conventional models of planet formation. Based only on our own crowded but orderly family of planets, astronomers had assumed that planets coalesce calmly out of a flat disc of gas and dust that circled the star like a record. Hot Jupiters are too massive to have formed as close to their stars as they are now, implying a history of planet-on-planet violence in which bigger planets tossed smaller ones out in order to migrate inward.

Now though, it seems our orderly orbits might not be so odd. A second study out this week from the EXOEarths collaboration compared data from HARPS, which is sensitive to all planetary systems regardless of their orientation with respect to Earth, and the Kepler Space Telescope, which can see planets only if they transit, or cross in front of their star as seen from Earth. If Kepler sees multiple transits across the same star, that means there must be two or more planets in more or less the same orbital plane.

EXOEarths team member Pedro Figueira of the University of Porto, Portugal, and colleagues calculated how many such systems Kepler should see, given the frequency of all planetary seen by HARPS. The results matched what Kepler actually sees.

That means that planets' orbits are probably more often aligned than not, and suggests that

planets often form in a disc without much violent jostling.

"These results show us that the way our solar system formed must be common," Figueira said, according to a press release. "Its structure is the same as the other planetary systems we studied, with all planets orbiting roughly in the same plane."