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UW astronomer discovers Earthlike planet, keeps the faith

Eric Agol is a UW astronomer credited with discovering an earthlike planet that's 1,200 light years away. He's also a man of faith — faith in science and faith in Christianity as he deals with questions such as how the universe was created.

By Erik Lacitis

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It was a Friday afternoon, Aug. 31 of last year, that Eric Agol, a 42-year-old associate professor of astronomy at the University of Washington, looked at his computer screen and saw something astounding.

The algorithm Agol had put together and run had found an Earthlike planet some 1,200 light-years away.

It was orbiting its own sun, in a “habitable zone,” nicknamed the “Goldilocks zone,” meaning its temperatures are suitable for liquid water. And possibly life.

You could say Agol’s work puts him at the crossroads of some complex questions, which he answers with faith.

Five planets

These days, astronomers don’t really peer through giant telescopes.

They look at computer data.

This new planet — 40 percent bigger than Earth, with a 267-day year — showed up as a dip in a bunch of dots across the screen. The dip was from a shadow created as the planet crossed the star it was circling.

Agol's finding had been missed by the numerous other scientists studying the digital information from NASA's orbiting Kepler telescope, named for 17th century astronomer Johannes Kepler and launched in 2009 specifically to discover stars in our galaxy that are orbited by habitable, Earth-size planets.

Agol is a low-key guy, but he admits, "I definitely was excited."

By the time his results were vetted by fellow astronomers, and a paper was published in the journal *Science* by the Kepler team of 44 co-authors, it was April 18 of this year.

In all, five planets were found around that star — called the Kepler-62 system because it was the 62nd star where planets had been confirmed. Obviously, the astronomers don't place much weight on coming up with sexy names for their discoveries.

Of those five planets, the one found by Agol, called Kepler-62f, and another planet, Kepler-62e, were in that habitable zone.

William Borucki, the Kepler science principal investigator, would tweet: "I consider Kepler-62e and 62f golden discoveries."

But not wanting to raise expectations about finding an "Earth 2.0," he cautioned, "But, we're hunting for platinum."

Still, in the astronomy world, it was exciting news.

"We only know of one star that hosts a planet with life, the sun. Finding a planet in the habitable zone around a star like our sun is a significant milestone toward finding truly Earthlike planets," a news release from NASA stated, quoting Thomas Barclay, a Kepler scientist.

Faith in science, God

For Agol, the search for a habitable planet has him pondering philosophical matters.

He is a man of faith.

Faith in science, and good at it, having received a Faculty Early Career Development award from the National Science Foundation.

And he has faith in a higher power. Agol and his wife, Esther McKean, and two young sons, who live in Edmonds, attend a nondenominational Christian church pretty much every weekend.

He knows that makes him a bit unusual.

"Certainly for Seattle," says Agol, referring to this area's reputation for being relatively unchurched. "And among scientists."

According to a 2009 Pew Research Center poll, 95 percent of the general public believes in some form of deity, but only 51 percent of scientists do.

But the way Agol sees it, big leaps of faith have to be taken in science, too.

"It's a big leap of faith to believe there are particles called electrons, and they are the same everywhere in the universe, billions of light years away, the same as the ones we are studying in a laboratory," he says.

"There is evidence to indicate that's correct, but, nevertheless, it's a belief that you can't prove."

And so Agol is comfortable believing that a higher power created the universe, even if, "I don't think religion can answer that by giving you a detailed scientific answer."

These days, Agol keeps running his computer program, searching for more planets in that prized habitable zone.

By his calculations, there are 242 other stars like Kepler-62 in our Milky Way galaxy that have a planet similar to the one he discovered that Friday afternoon last year.

And, he says, the Kepler spacecraft is only looking at about one-four-hundredth of the sky, which means there are 400 sets of stars it's not observing.

So multiply 242 times 400, and that's nearly 100,000 stars in our galaxy with planets like Kepler-62f.

He says the potential for life on 62f is improbable, but if the odds were a million to one with other planets found, "this one might be 10,000 to one or 100,000 to one."

Meanwhile, he keeps the faith.

"There's a lot that science can't answer," says Agol. "In fact, never will be able to answer."

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