**Albert Einstein Discovers New Planet. Really.**

By [Michael D. Lemonick](http://science.time.com/contributor/michael-d-lemonick/)June 04, 2013[0](http://science.time.com/2013/06/04/albert-einstein-discovers-new-planet-really/#comments)

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[Albert Einstein](http://www.time.com/time/covers/0%2C16641%2C19991231%2C00.html) didn’t care much about [planets](http://topics.time.com/planets/), and you can hardly blame him. After all, when you’re busy transforming physics with such revolutionary discoveries as the four-dimensional [curvature of spacetime](http://www.time.com/time/subscriber/article/0%2C33009%2C993018%2C00.html) and the [equivalence of matter and energy](http://www.time.com/time/subscriber/article/0%2C33009%2C792239%2C00.html), you don’t have time to worry about trivia.

Yet one of Einstein’s weirder ideas has led to the identification of a new planet, about twice as massive as Jupiter, orbiting a star some 2,000 light-years from [Earth](http://topics.time.com/earth/) — a discovery Einstein never even envisioned but one that may never have happened without him. Indeed, David Latham, a Harvard astronomer who collaborated on the discovery, originally doubted it was even possible to do what he (under Einstein’s guiding hand)  recently succeeded in doing. “I thought it was silly,” he says. “I thought the effect was so small we’d never detect it.”

The effect in question is “relativistic beaming,” and it dictates that when a bright object is coming right at you, the warping of spacetime caused by that motion will force its light into a narrower, more focused beam that looks brighter than it really is. While Einstein never suggested using that phenomenon to look for planets, Latham’s Harvard colleague Avi Loeb and [Ohio](http://topics.time.com/ohio/) State’s Scott Gaudi did, in a theoretical paper published in 2003.

Their reasoning: as a planet orbits its star, its gravity pulls on the star, first one way, then the other. If the planet is lined up more or less edge-on from the perspective of Earth, that pulling will yank the star toward Earth, then away. When it’s coming toward Earth, relativistic beaming will make the star look brighter, and when it’s moving away, it should get dimmer.

In fact, the very first exoplanets were found in a similar sort of way, back in the 1990’s, except that those first planet-hunters were looking for a shift in color, not brightness. That’s because motion toward the observer makes starlight look a little bluer than it really is, while motion away stretches the light wave and makes it look redder (this so-called redshifting applies to entire galaxies, not just stars; it’s how astronomers discovered, back in the 1920’s, that [the universe is expanding](http://www.time.com/time/subscriber/article/0%2C33009%2C892913%2C00.html)).

Finding planets by shifts in color is hard enough: first-generation planet hunters like Berkeley’s [Geoff Marcy](http://www.time.com/time/subscriber/article/0%2C33009%2C984058%2C00.html) faced a lot of skepticism from  colleagues for even bothering. But this new technique is even tougher, requiring measurements of changes in brightness  as small as a few parts per million. Back in 2003, when Loeb and Gaudi proposed the idea, it was indeed silly to try.

But once the [Kepler spacecraft](http://science.time.com/2013/05/16/trouble-in-deep-space-wheel-malfunction-threatens-kepler-telescopes-future/) went into orbit in 2009, it wasn’t quite so ridiculous, so Latham, along with Israeli astronomers Simchon Faigler and Tsevi Mazeh, plus several others set out to see if it could be done. They weren’t looking just for the beaming effect: the star-planet system, they figured, should brighten and dim for two other reasons. First, a close-in orbiting planet should raise tides on the star, making it bulge into a very slightly oval shape that follows the planet as it orbits, just as tides in Earth’s oceans follow the Moon in its orbit. When the bulge is pointed right at Earth, the star looks just a little smaller than normal, and thus a bit dimmer. When the bulge points off to the side, the star looks bigger and brighter.

Finally, the star heats up the planet, which glows with its own light — but that light isn’t visible when the planet is in front of the star, just as the Moon is dark when it’s between the Earth and the Sun. When the planet swings around to the other side of the star, it’s like seeing the full Moon. There’s just a bit more light, and Kepler can measure the extra.

Each of these effects — extra light from the planet, extra light from the bulging star and extra light from relativistic beaming — is incredibly subtle. “It’s very dim,” says Latham, “so we had to observe through hundreds of orbits to be sure we were seeing it.”

Clearly, they were, and they may be seeing it in other places as well. “We have several other candidates,” says Mazeh, “and we’re learning how to do this better all the time.”

That’s important enough in the planet-hunting game, but it’s also a reminder of Einstein’s brilliance: even the ideas he never had himself turn out to be some of his most ingenious ones.