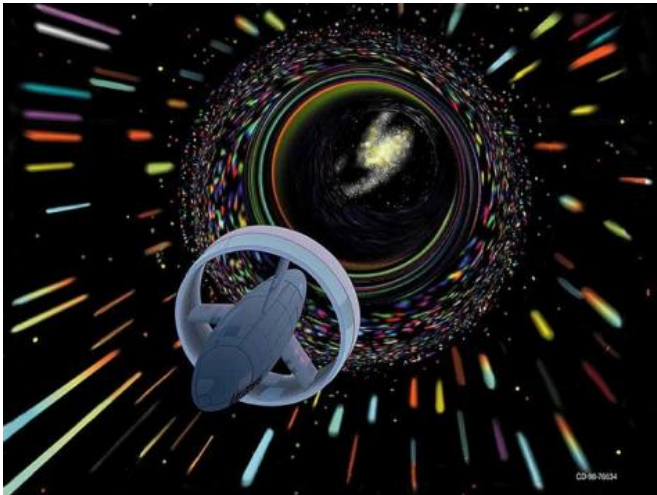


# Scientists investigate the possibility of wormholes between stars

25 February 2011, by Lisa Zyga



Artistic illustration of wormhole travel. Image credit: NASA/Les Bossinas (Cortez III Service Corp.)

(PhysOrg.com) -- Wormholes are one of the stranger objects that arise in general relativity. Although no experimental evidence for wormholes exists, scientists predict that they would appear to serve as shortcuts between one point of spacetime and another. Scientists usually imagine wormholes connecting regions of empty space, but now a new study suggests that wormholes might exist between distant stars. Instead of being empty tunnels, these wormholes would contain a perfect fluid that flows back and forth between the two stars, possibly giving them a detectable signature.

The scientists, Vladimir Dzhunushaliev at the Eurasian National University in Kazakhstan and coauthors, have posted their investigation of the possibility of wormholes between stars on arXiv.org.

The scientists began investigating the idea of wormholes between stars when they were researching what kinds of astrophysical objects

could serve as entrances to wormholes. According to previous models, some of these objects could look similar to stars.

This idea led the scientists to wonder if wormholes might exist in otherwise ordinary stars and [neutron stars](#). From a distance, these stars would look very much like normal stars (and normal neutron stars), but they might have a few differences that could be detectable.

To investigate these differences, the researchers developed a model of an ordinary star with a tunnel at the star's center, through which matter could move. Two stars that share a wormhole would have a unique connection, since they are associated with the two mouths of the wormhole. Because exotic matter in the wormhole could flow like a fluid between the stars, both stars would likely pulse in an unusual way. This pulsing could lead to the release of various kinds of energy, such as ultrahigh-energy cosmic rays.

For now, the difficult part is calculating exactly what kinds of oscillations are occurring, and what kind of energy is being released. This information would allow scientists to predict what a wormhole-containing star might look like from Earth, and begin searching for these otherwise normal-looking stars.

**More information:** Vladimir Dzhunushaliev, et al. "A Star Harboring a Wormhole at its Center." [arXiv:1102.4454v1](#) [astro-ph.GA]

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