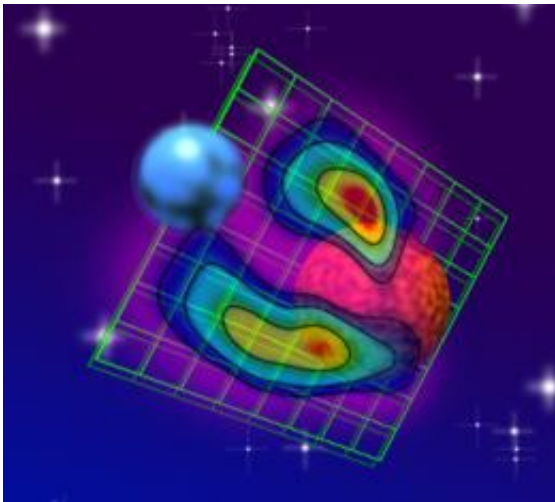


# Giant Magnetic Loop Sweeps Through Space Between Stellar Pair

January 13 2010, by Dave Finley

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Artist's conception of Algol star system with radio image superimposed on grid.  
Credit: Peterson et al., NRAO/AUI/NSF

(PhysOrg.com) -- Astronomers have found a giant magnetic loop stretched outward from one of the stars making up the famous double-star system Algol. The scientists used an international collection of radio telescopes to discover the feature, which may help explain details of previous observations of the stellar system.

"This is the first time we've seen a feature like this in the magnetic field of any star other than the Sun," said William Peterson, of the University of Iowa.

The pair, 93 light-years from Earth, includes a star about 3 times more massive than the Sun and a less-massive companion, orbiting it at a distance of 5.8 million miles, only about six percent of the distance between Earth and the Sun. The newly-discovered magnetic loop emerges from the poles of the less-massive star and stretches outward in the direction of the primary star. As the secondary star orbits its companion, one side -- the side with the magnetic loop -- constantly faces the more-massive star, just as the same side of our Moon always faces the Earth.

The scientists detected the magnetic loop by making extremely detailed images of the system using an intercontinental set of [radio telescopes](#), including the National Science Foundation's [Very Long Baseline Array](#), Very Large Array, and Robert C. Byrd Green Bank Telescope, along with the Effelsberg radio telescope in Germany. These radio telescopes were used as a single observing system that offered both great detail, or resolving power, and high sensitivity to detect very faint radio waves. When working together, these telescopes are known as the High Sensitivity Array.

Algol, in the constellation Perseus, is visible to the naked eye and well-known to amateur astronomers. As seen from Earth, the two [stars](#) regularly pass in front of each other, causing a notable change in brightness. The pair completes a cycle of such eclipses in less than three days, making it a popular object for amateur observers. The variability in brightness was discovered by an Italian astronomer in 1667, and the eclipsing-binary explanation was confirmed in 1889.

The newly-discovered magnetic loop helps explain phenomena seen in earlier observations of the Algol system at X-ray and radio wavelengths, the scientists said. In addition, they now believe there may be similar magnetic features in other double-star systems.

**More information:** The scientists reported their findings in the 14 January edition of the scientific journal *Nature*.

Provided by National Radio Astronomy Observatory

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