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## ASTRONOMY

North Star pulses brightly with constant change

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By Tom Statler



People believe a lot of things that are simply untrue. Like that it's cold in winter because Earth is farther from the sun. Or that Polaris, the "North Star," is the brightest star in the sky.

Polaris is only the 49th-brightest star visible from Earth.

But two things make Polaris special. One is that the spin axis of Earth happens to be pointing toward it, which is why we call it the "North Star."

The other is that Polaris is the closest Cepheid variable. I've written before about these special types of variable stars, which give us one of the best ways of measuring the size of the universe.

Cepheid variable stars pulsate, getting larger and brighter, and smaller and fainter, in a regular cycle. Polaris goes through its cycle in about four days.

How much a star brightens and dims -- the amplitude -- varies from star to star. In Polaris' case, it's only a few percent.

But in the 1980s, astronomers noticed that Polaris' amplitude was dropping, and some predicted that the star would stop pulsating altogether in a few years. One paper published in 1993 was titled "Goodbye to Polaris the Cepheid."

But a paper in this month's *Astrophysical Journal* announces: "Polaris the Cepheid Returns."

In the paper, Hans Bruntt of the University of Sydney and collaborators report that Polaris is back on its regular cycle and has a growing amplitude.

Polaris' pulsation rate is slowing down, by about one-tenth of a percent per century. There is evidence that its average power output has been increasing, perhaps doubling over the past 2,000 years.

So Julius Caesar might have seen a North Star substantially fainter than we see today. But it's doubtful that he really knew what he was seeing.

Shakespeare's Caesar proclaims, "I am constant as the Northern Star," just before things start to get really bad.

So be careful what you say about Polaris. People have been wrong before.

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