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Bright star erupts, may go supernova

Already more powerful than our sun, it grew in intensity by 20%

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SEATTLE - One of the brightest and biggest stars in the heavens is going through a series of eruptions and dimming that may lead eventually to a supernova explosion, astronomers say.

The star, called Rho Cassiopeia, is a hypergiant with 20 times to 40 times the mass of the sun.

It puts out a half million times more light than the sun and can easily be seen from Earth even though it is 10,000 light years away. . Using a light year as a distance measurement helps determine age. The light from a star that is 1 million light years away was created 1 million years ago.

But Rho Cas, as it is called, is a seething, unstable ball of gas that expands and contracts over time and occasionally erupts with a violence that sends immense amounts of matter streaming through space.

Astronomers at the Harvard-Smithsonian Center for Astrophysics captured images of such an explosion in 2000 and reported on their observations Tuesday at the national meeting of the American Astronomical Society.

Over a 200-day period, the star became brighter by 20 percent, a flare that made it one of the brightest stars in the universe, and then it dimmed, dropping in brightness by two magnitudes.

"An atmospheric shell was shredded by the blast wave and sent into space at Mach 4 (four times the speed of sound)," said Alex Lobel, also of Harvard-Smithsonian.

The astronomers estimated that Rho Cas blasted mass equal to 10,000 Earths into space.

"This is a higher rate of loss than has been seen on any other star," said Lobel.

All of this activity suggests that Rho Cas is nearing the end.

"These stars live only a few million years and it is in the late stages of its evolution," Lobel said. This is in contrast to main sequence stars, such as the sun, that will burn for more than 10 billion years.

Lobel said only a few stars among the billions in the Milky Way are the size of Rho Cas.

The astronomers believe Rho Cas is building toward another explosion and said it should be visible even to amateur astronomers, although they are uncertain just exactly it will happen.

Rho Cas is located in the northern sky in a constellation Cassiopeia. This star formation is marked by a 'W' shaped arrangements of stars and Rho Cas is in one of the arms of the figure.

Eventually, perhaps in a few thousand years, Rho Cas will erupt into a supernova explosion, one of the most powerful releases of energy in the universe. That will rip the star apart in one final, gigantic spasm of violence.