At the Core of the Milky Way, The Brightest Star Ever Seen

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Try to imagine a star so big that it would fill all of the solar system within the orbit of Earth, which is 93 million miles from the Sun. A star so tenuous that its eruptions would spread a cloud of gases spanning four light-years, the distance from the Sun to the nearest star. A star so powerful that it glows with the energy of 10 million suns, making it the brightest ever observed in our galaxy, the Milky Way.

Actually, a star so big and so bright should be unimagnifiable, according to some theories of star formation. But there it is, near the center of the Milky Way, long hidden from the human eye by dust and clouds and its magnitude only now revealed by the Hubble Space Telescope, using a camera sensitive to the infrared light that penetrates the clouds.

The detection of the luminous star, about 25,000 light-years from Earth in the direction of the constellation Sagittarius, was announced yesterday by the Space Telescope Science Institute in Baltimore and the University of California at Los Angeles. The infrared photograph was taken and analyzed by a team of astronomers led by Dr. Donald F. Figer and Dr. Mark R. Morris of the university.

"This star may have been more massive than any other star, and now it is without question still among the most massive," Dr. Figer said. "Its formation and life stages will provide important tests for new theories about star birth and evolution."

Dr. Bruce H. Margon, an astronomer at the University of Washington in Seattle, said the discovery demonstrated the ability of the Hubble telescope's near infrared camera and multi-object spectrometer, an instrument installed last year by visiting astronauts, to probe the central regions of the Milky Way. Dust clouds there had left astronomers working in a virtual fog. The dust absorbs the visible light of stars, even those as bright as the one that was just identified.

In fact, it was the telescope's infrared capability that made discovery of the star possible. Its detection of the luminous star, about 25,000 light-years from Earth in the direction of the constellation Sagittarius, was announced yesterday by the Space Telescope Science Institute in Baltimore and the University of California at Los Angeles. The infrared photograph was taken and analyzed by a team of astronomers led by Dr. Donald F. Figer and Dr. Mark R. Morris of the university.

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As a result, "we know less about the center of our own galaxy than we do about the center of other much more distant galaxies," Dr. Margon said.

The presence of a presumably mammoth star in that dusty region was first noted early in this decade by ground-based infrared telescopes. In research for his doctorate in astronomy, Dr. Figer found reasons to suspect that the star was especially powerful and that its "past eruptive stages" might have created the glowing nebula of dust and gas around it.

The Hubble findings not only revealed the full magnitude of the star but also confirmed that its eruptions had produced the extensive nebula. Astronomers said the shape of the nebula reminded them of a pistol, and named its source the Pistol Star.

From the star's brightness and prodigious output of gases, astronomers have drawn conclusions about its short and brilliant career. It probably formed one million to three million years ago, a brief time in cosmic history. It may have weighed up to 10 times the mass of the Sun before consuming and shedding so much of its mass in violent eruptions.

Dr. Figer and Dr. Morris said the Pistol Star was so massive when it was born that it brought into question current thinking about how stars were formed. Stars...