

2012 HARCOURT C. "ACE" VERNON MEMORIAL LECTURE

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The Black Hole at the Center of Our Milky Way Galaxy

A Slumbering Giant



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At the center of our Milky Way Galaxy, stars are orbiting something — at a dizzying pace of up to 3,000 miles per second — and some of those stars have vanished.

"It's a giant black hole," says UCLA Professor Mark Morris, who has been observing it with the Keck telescopes in Hawaii. He'll share his fascinating findings about this cosmic place where gravity is so great that nearby matter gets sucked inside, and even light can't get out.

This artist's concept depicts a supermassive black hole at the center of a galaxy. The blue color here represents radiation pouring out from material very close to the black hole. The grayish structure surrounding the black hole, called a torus, is made up of gas and dust. Image credit: NASA/JPL-Caltech

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Hungry Black Hole

If a star wanders too close to a black hole . . . look out!

The black hole, with its tremendous gravitational pull, will shred the star apart. Some parts of the star will get sucked into the black hole; others will get spit out at high speeds.

A black hole is anything but empty. Tremendous amounts of matter are packed inside. A black hole's gravity is so strong that nothing, even light, can escape it!

The illustration depicts a supermassive black hole ripping apart a star and consuming a portion of it, a long-predicted astronomical event confirmed by NASA's Chandra and the European Space Agency's XMM-Newton X-ray Observatories.

Astronomers believe a doomed star came too close to a giant black hole after being thrown off course by a close encounter with another star. As it neared the enormous gravity of the black hole, the star was stretched by tidal forces until it was torn apart. This discovery provides crucial information about how these black holes grow and affect surrounding stars and gas.

Illustration: NASA/CXC/M.Weiss

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