

CHAPTER OVERVIEW

24: Black Holes and Curved Spacetime

For most of the twentieth century, black holes seemed the stuff of science fiction, portrayed either as monster vacuum cleaners consuming all the matter around them or as tunnels from one universe to another. But the truth about black holes is almost stranger than fiction. As we continue our voyage into the universe, we will discover that black holes are the key to explaining many mysterious and remarkable objects—including collapsed stars and the active centers of giant galaxies.

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Thumbnail: The artist's illustration on the right shows the black hole pulling material away from a massive blue companion star. This material forms a disk (shown in red and orange) that rotates around the black hole before falling into it or being redirected away from the black hole in the form of powerful jets. The material in the disk (before it falls into the black hole) is so hot that it glows with X-rays, explaining why this object is an X-ray source (credit modification of work by NASA/CXC/M.Weiss).

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