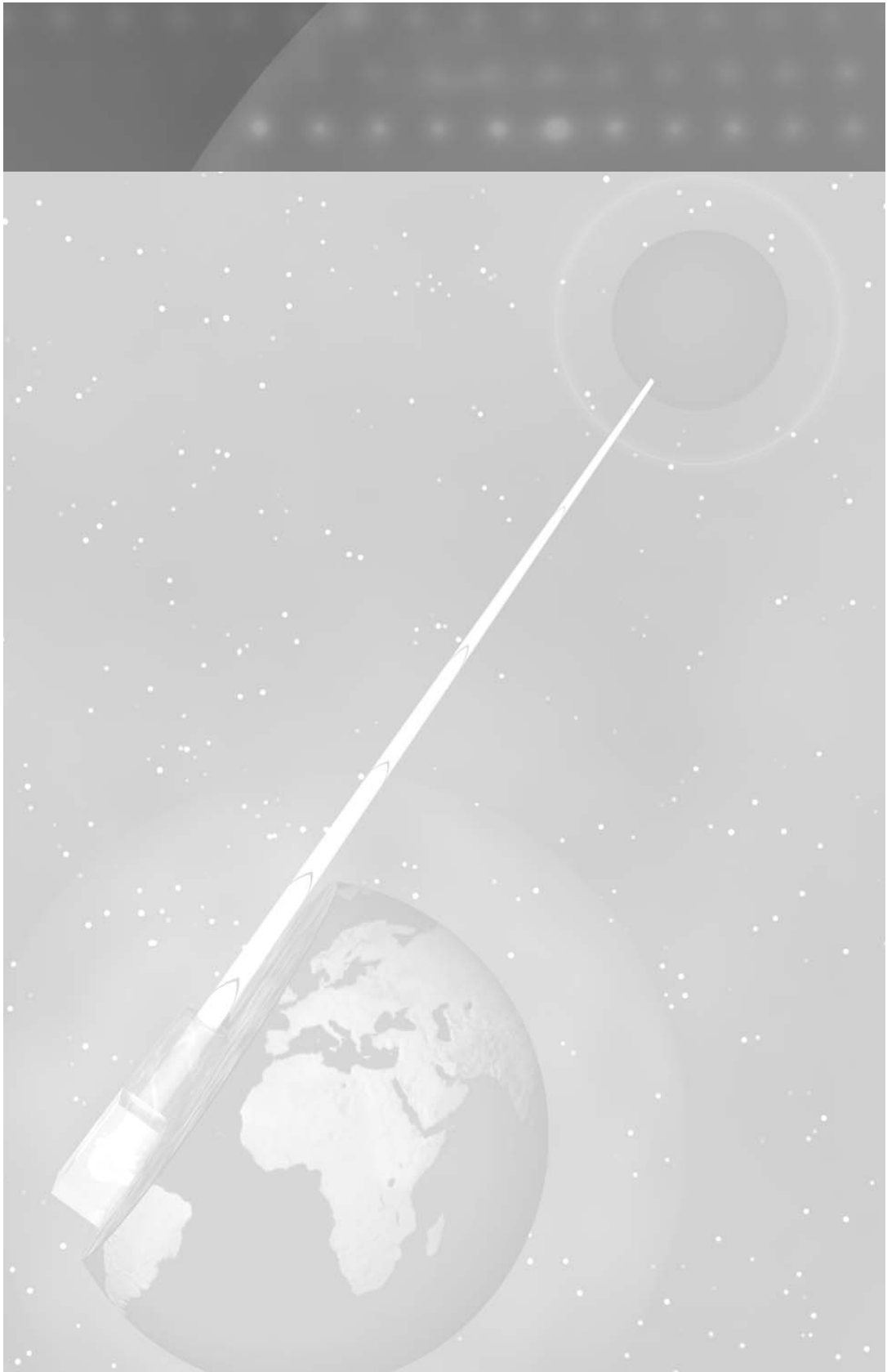


CHAPTER FIVE

BLACK HOLES AND MATTER AT THE SPEED OF LIGHT

In this chapter

- We will consider the escape velocity at a black hole
- Consider an event horizon
- Consider what happens to matter near the surface of a black hole.
- Consider the alleged speed limit: light speed
- Consider the possibility of matter exceeding the speed of light





What a Black Hole Is

A black hole is an energy structure of such great density that all of the energy that collides with it becomes part of it. Light does not reflect off or radiate from its surface.

Black holes have extreme gravitational fields, so strong that any matter that is caught in the gravitational field of a black hole never reaches the surface as atomic matter; all of its atoms are converted to electromagnetic energy before they reach the surface. However, the inward forces acting upon the black hole compress this and all other such electromagnetic energy into homogeneous matter, once it reaches the surface of the black hole.

Escape Velocity

Why is it that light cannot escape from a black hole?

The common idea is that the gravitational field of a black hole is so strong that the escape velocity is greater than the speed of light, and that any light emitted by the black hole is pulled back toward it. This idea allows for what is known as an event horizon.

An event horizon is an area surrounding a black hole at a distance, separating the region from which light can escape and the region from which it cannot. It is believed that light will hover at this point, never escaping and never falling back toward the black hole.

Most illustrations of this event horizon depict light traveling in a straight-line path away from the center of the black hole. Such a concept suggests that light travels under its own power and can propel itself indefinitely.

This idea differs considerably from the concepts described in origo theory, which credits a force called origo for the existence of the universe and everything that happens in it, including the propagation of light.

Using the concept of origo, we will now answer the question of why light cannot escape from a black hole.

As was stated in chapter two, the amount of energy that origo loses to an energy structure is equal to the mass of the energy structure. In addition, the amount of energy that origo loses per unit of volume to an energy structure is equal to the energy structure's density. A black hole is as dense as an energy structure can possibly be. Origo loses all of its energy to a black hole; therefore, its gravitational field is also as strong as a gravitational field can possibly be. This means that origo is moving toward a black hole from every direction, but is not moving directly away from it at all.

If light were generated near the surface of a black hole, it would not be carried away by origo in every direction, as would normally occur in a region without a black hole in the vicinity. Because origo is not moving away from the black hole at all, any light generated near the black hole's surface can only be carried by origo parallel to and toward its surface. The fact that it is possible for light to be carried parallel to the black hole's surface does not, however, mean that light near its surface will necessarily orbit it.

As our earlier example suggested, imagine that the surface

BLACK HOLES AND MATTER AT THE SPEED OF LIGHT | 103

of the Earth is smooth and completely covered with water. Now imagine that gravity is eliminated at one point on the Earth, such as at one of the poles. The result would be that gravity would force all of the water around the planet and it would leave the planet at this pole. The difference between water and light in this analogy is that light cannot leave the instance of origo that carries it; instead, the light energy will be compressed.

Because there is no outward force coming from the black hole, there is no inward force acting upon any instance of origo from the direction of the black hole. This lack of inward force acting upon any instance of origo would be akin to the pole in our water analogy, at which gravity was eliminated. Therefore, the light energy would be forced in the direction of the black hole, the path of least resistance.

Although the escape velocity is greater than the accepted value for the speed of light in a vacuum, insufficient velocity is not the reason that light cannot escape from a black hole; it is due only to the lack of origo moving away from the black hole, which would be necessary to carry it away.

The Ever-Changing Event Horizon

According to origo theory, origo carries light through the universe; light does not propel itself through the universe.

Without some condition to prevent it, origo is always in motion in straight lines, in every direction. For an event horizon to exist, it seems that origo would have to hover at a distance from the surface of the black hole.