



**M104: The Sombrero Galaxy**



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### Hats Off to the Sombrero Galaxy

This photogenic galaxy looks like a broad-brimmed Mexican hat floating in space. Appropriately called the Sombrero Galaxy, its catalogue name is Messier 104 (M104). Thick dust lanes make up the brim of the galaxy. The brim winds in to the brilliant white crown, made up of a central bulge of older stars. These stars are much like those in the middle of our own Milky Way Galaxy.

As seen from Earth, this galactic hat is tilted nearly edge-on, emphasizing a galaxy's three-dimensional structure. The central bulge, for example, can be seen extending above and below the galaxy's flat disk. This view also shows that the disks of galaxies are thin. Dust in the galaxy's wide, flat disk blocks out light from the Sombrero, appearing like a shadow against the bright bulge of stars.

In this image, NASA's Hubble Space Telescope easily resolves the Sombrero's rich system of star clusters, called globular clusters. Astronomers estimate that the Sombrero contains nearly 2,000 globular clusters — 10 times as many as orbit our Milky Way. The ages of the clusters are similar to those in the Milky Way, ranging from 10–13 billion years old. The Sombrero is suspected of harboring a central black hole that is billions of times more massive than our Sun.

The Sombrero resides about 30 million light-years away at the southern edge of the dense Virgo cluster of galaxies. The galaxy is so far away that the light we are seeing today began its journey toward Earth 30 million years ago, about the time our earliest known ape-like ancestors appeared on our planet. A relatively bright galaxy, the Sombrero lies just beyond the limit of the naked eye and is easily visible through the telescopes of amateur stargazers. The hat-shaped galaxy contains several hundred billion stars, about 100 times as many stars as there are people today on Earth. Edge to edge, the Sombrero is 60,000 light-years across, which is slightly smaller than our Milky Way.

### VOCABULARY

**Globular Cluster:** A spherically shaped collection of up to a million old stars held together by gravity and usually found in the halo of galaxies.

**Central Bulge:** A round structure at the center of spiral galaxies composed mostly of old stars and some gas and dust.

**Spiral Galaxy:** A large pinwheel-shaped system of stars, dust, and gas clouds.

**Messier Catalogue (M):** A catalogue of about a hundred of the brightest galaxies, star clusters, and nebulae, compiled in the late 1700s by French astronomer Charles Messier.

### FAST FACTS

**Constellation:** Virgo

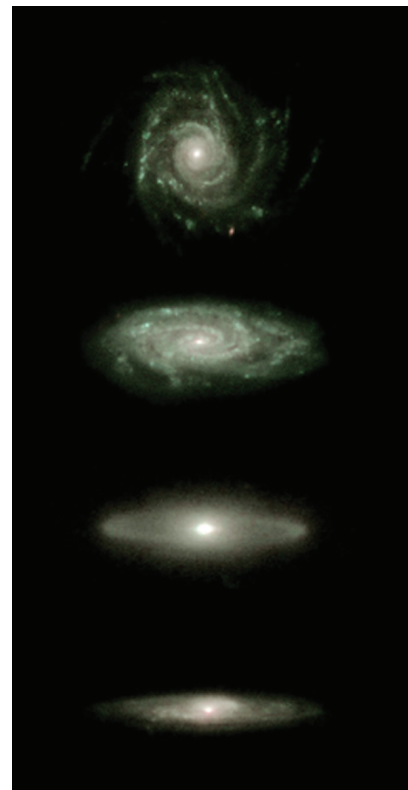
**Distance from Earth:** 30 million light-years

**Length of galaxy:** 60,000 light-years

*Credit: NASA and the Hubble Heritage Team (STScI/AURA)*

### Looks are deceiving.

A galaxy's appearance depends on how it is tilted toward Earth. The images at right, taken from deep surveys, illustrate that galaxies look different depending on the angle at which we see them. A galaxy, when viewed from above, [right, top] appears round. Galaxies that are viewed from the side, or edge-on [right, bottom], look like flat pancakes. Another galaxy that is viewed edge-on is the Sombrero Galaxy [bottom].



You can get images and other information about the Hubble Space Telescope on the World Wide Web. Visit <https://hubblesite.org/> and follow the links.



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