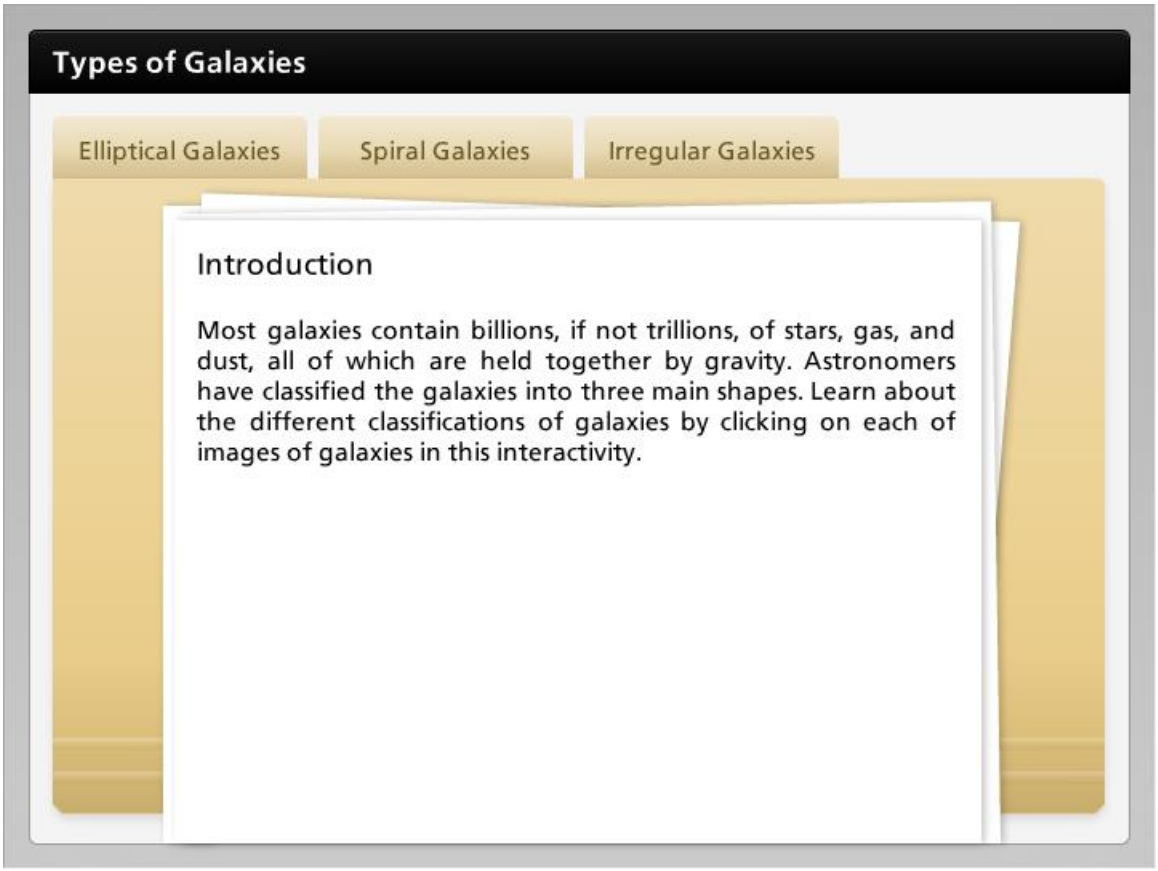
Module 8: Groups of Stars
Topic 2 Content: Types of Galaxies Notes

Introduction



Most galaxies contain billions, if not trillions, of stars, gas, and dust, all of which are held together by gravity. Astronomers have classified the galaxies into three main shapes. Learn about the different classifications of galaxies by clicking on each of images of galaxies in this interactivity.

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Elliptical Galaxies

Elliptical galaxies are round and lack visible dust and gas, and hot bright stars. These galaxies are known for their smooth oval appearance. The elliptical galaxy is shaped like a football. Elliptical galaxies contain old stars that have very random orbits within the galaxy itself.

Elliptical galaxies are abbreviated with an **E** with a number ranging from **0-7**. If the galaxy is more elliptical then a classification of **E0** is appropriate. Less elliptical galaxies will receive an **E7** classification.

Image: The giant elliptical galaxy ESO 325-G004 (Courtesy of NASA)

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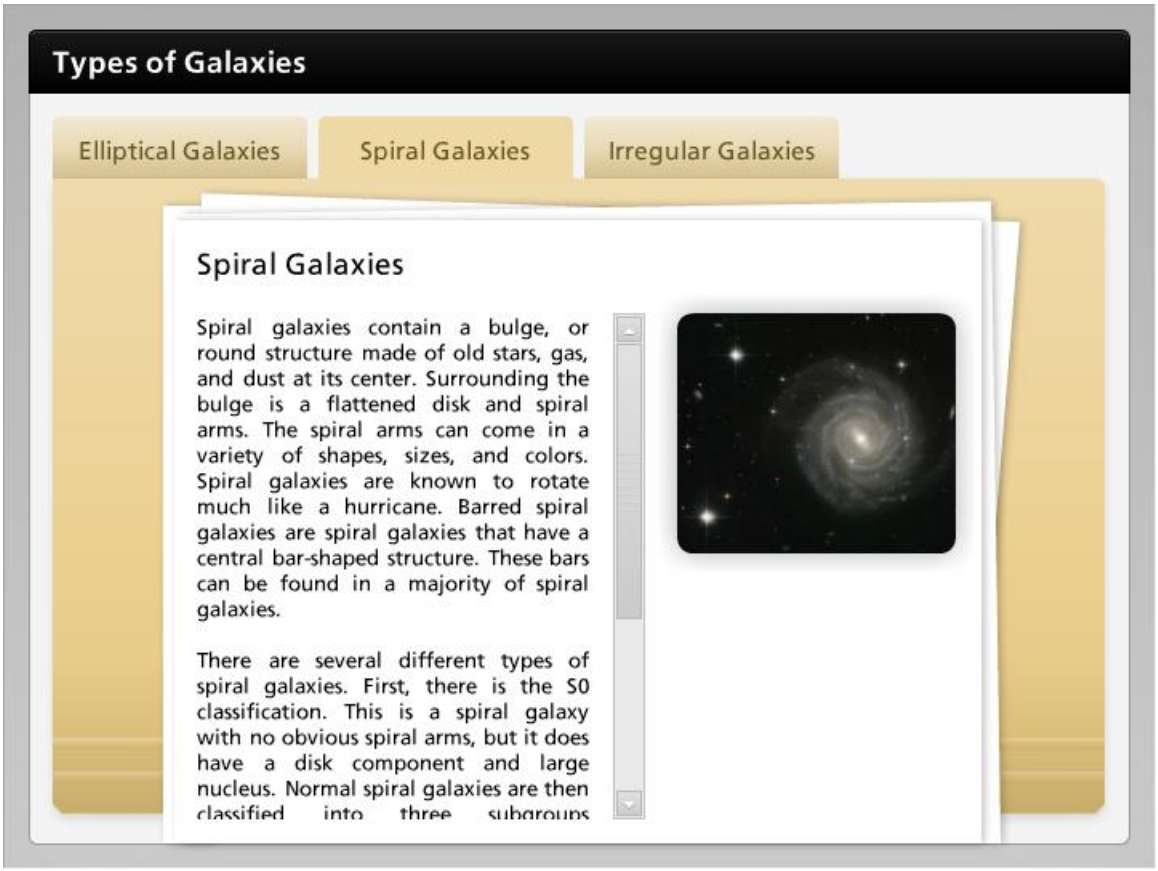
Spiral Galaxies

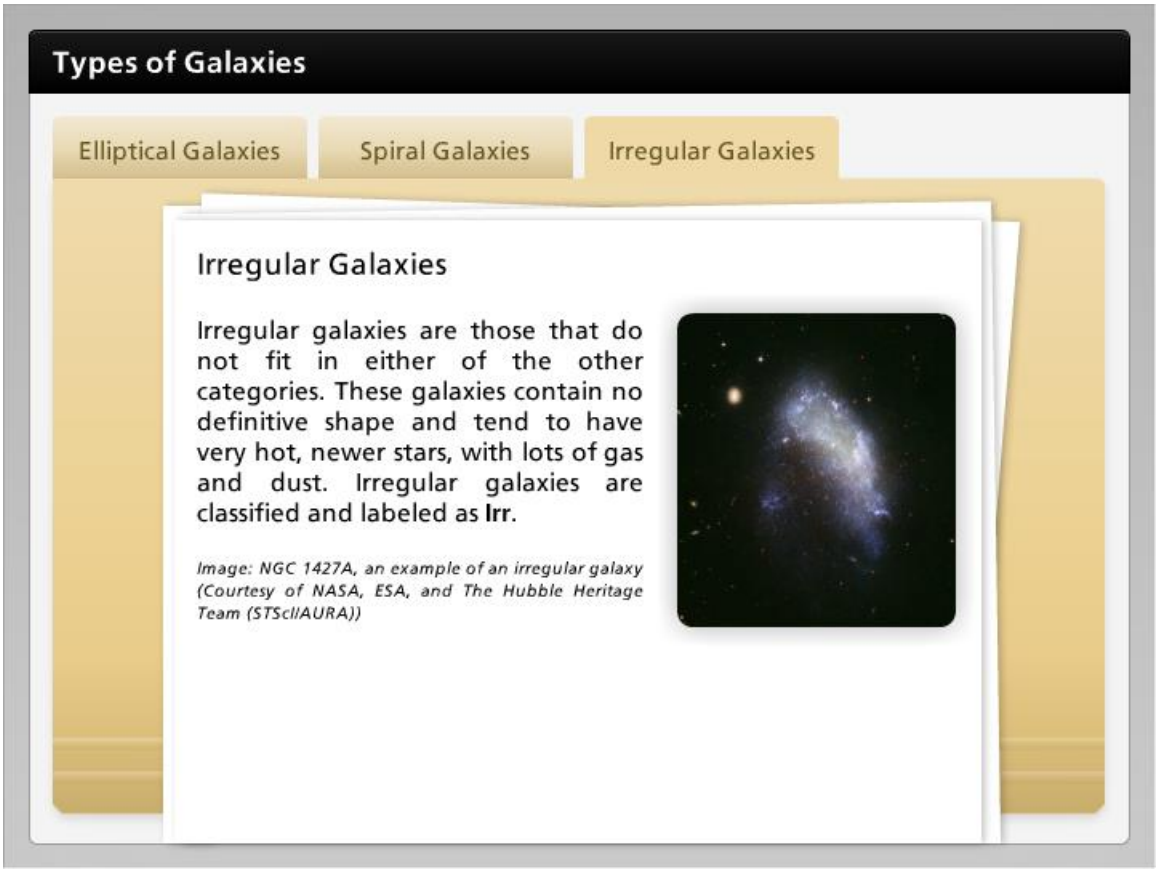


Spiral galaxies contain a bulge, or round structure made of old stars, gas, and dust at its center. Surrounding the bulge is a flattened disk and spiral arms. The spiral arms can come in a variety of shapes, sizes, and colors. Spiral galaxies are known to rotate much like a hurricane. Barred spiral galaxies are spiral galaxies that have a central bar-shaped structure. These bars can be found in a majority of spiral galaxies.

There are several different types of spiral galaxies. First, there is the S0 classification. This is a spiral galaxy with no obvious spiral arms, but it does have a disk component and large nucleus. Normal spiral galaxies are then classified into three subgroups according to the size of the bulge and degree to which their arms are wound. Sa galaxies have tightly wound arms and larger bulges. Sc galaxies have small clouds and loose arms. Sb galaxies are found between Sa and Sc. Bared spiraled galaxies are classified along the same criteria using SBa, SBb, and SBc.

Image: The barred spiral galaxy UGC 12158 (Courtesy of NASA)

Irregular Galaxies



Irregular galaxies are those that do not fit in either of the other categories. These galaxies contain no definitive shape and tend to have very hot, newer stars, with lots of gas and dust. Irregular galaxies are classified and labeled as **Irr**.

Image: NGC 1427A, an example of an irregular galaxy (Courtesy of NASA, ESA, and The Hubble Heritage Team (STScI/AURA))