Binary Star System

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Binary Star System Latest News

A large team of astronomers and astrophysicists affiliated with several institutions in China recently discovered a binary star system, where one of the stars is a millisecond pulsar and the other is made mostly of helium.

About Binary Star System

- A binary star is a system of **two gravitationally bound stars** that **orbit a common center of mass** called a **barycenter.**
- Stars in a binary system do **not necessarily have the same mass, size, or brightness.**
- The **larger star** of a binary couple is called the **primary star,** while the **smaller one** is known as the **secondary star or the companion star.**
- Binary stars **are double stars**, but **not all double stars are binary stars.**
    - This is because some **double stars** comprise two stars **close enough** in the sky over Earth **to appear as a single point of light**, but they are **actually vastly separated** in space and **not part of a gravitationally bound** binary system–these are called **optical doubles.**

- **Unlike the sun,** the vast **majority of stars have a binary partner.** It is estimated that around **85% of stars exist in binary star systems** or systems with three or more stars.
- Binary star systems can also **include systems containing a normal star and a stellar remnant,** an object that forms when a star runs out of the fuel for nuclear fusion and collapses under its own gravity.
    - These dense and compact star “corpses” **can include white dwarfs, neutron stars, and black holes.**
    - Especially **ancient binary systems can contain two stellar remnants** orbiting each other.
- **In some binary systems,** the **stars are so close** together that **they exchange material.** This mass transfer occurs when the **radius of one star** is **not much smaller than** the **orbital separation between the stars.**

Binary Star System FAQs

Q1: What is a binary star system?

Ans: It is a system of two gravitationally bound stars that orbit a common center of mass called a barycenter.

Q2: What is the common center of mass around which binary stars orbit called?

Ans: Barycenter

Q3: When can mass transfer occur between stars in a binary system?

Ans: When the radius of one star is not much smaller than the orbital separation between the stars.

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