



JADES-GS-Z14-0 - SCI & TECH

News: *Earliest-known galaxy, spotted by Webb telescope, is a beacon to cosmic dawn*

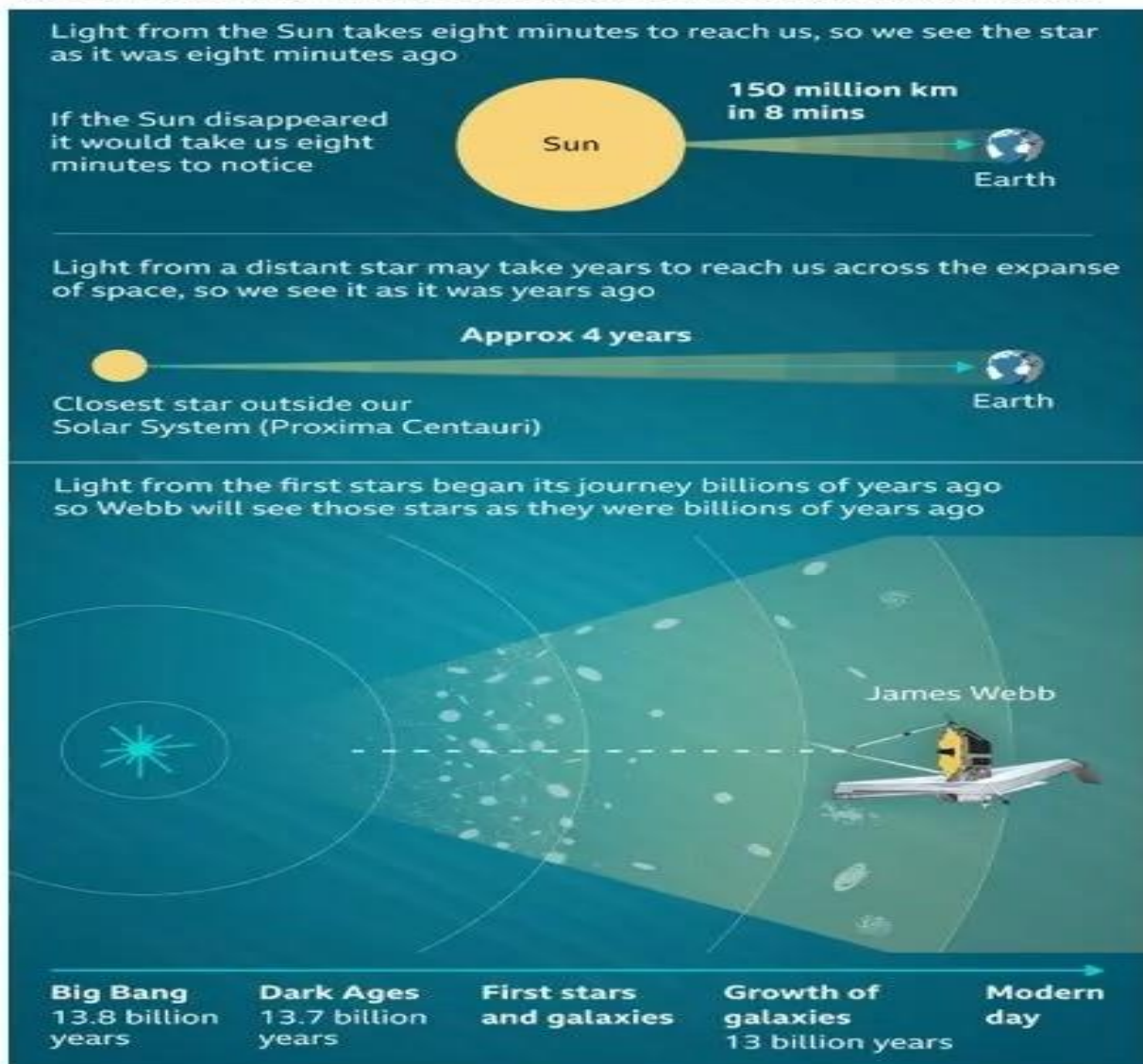
What's in the news?

- NASA's **James Webb Space Telescope** has spotted the earliest-known galaxy, one that is surprisingly bright and big considering it formed during the universe's infancy— at only 2% its current age.

Key takeaways:

- The telescope, also called JWST, has revolutionized the understanding of the early universe since becoming operational in 2022.
- The new discovery was made by the **JWST Advanced Deep Extragalactic Survey (JADES)** research team.

How James Webb is able to see back in time



Source: Nasa

BBC



Galaxy JADES-GS-z14-0:

- It is the **most distant known galaxy from Earth.**

Formation:

- JADES-GS-z14-0 was formed approximately **290 million years after the Big Bang.**
- Previously, the earliest-known galaxy was dated to 320 million years post-Big Bang.

Characteristics of Galaxy JADES-GS-z14-0:

Unique Properties:

- The galaxy contains **young stars and significant ionized gas emission.**

Size:

- Measures about **1,700 light-years across.**
 - A light year is 9.5 trillion kilometers.

Mass:

- Equivalent to 500 million stars the size of the Sun.

Findings of Galaxy JADES-GS-z14-0:

- Researchers found evidence of strong ionized gas emissions (including hydrogen and oxygen) within the galaxy.
- The presence of oxygen suggests that multiple generations of massive stars had already lived their lives before observing the galaxy.

Significance of the discovery of Galaxy JADES-GS-z14-0:

1. Challenges Previous Theories:

- This galaxy's size and brightness don't fit with existing ideas of how early galaxies formed.
- It suggests the process might be more surprising and complex.

2. New Insights into Early Universe:

- Studying JADES-GS-z14-0 helps understand the formation and evolution of galaxies in the early universe.
- It provides insights into the conditions of the universe shortly after the Big Bang.

3. Milestone in Cosmology:

- This discovery is a major breakthrough in our study of the universe's early history.