Unique Stellar Chemistry of Star A980

Source: PIB

Why in News?

Scientists at the **Indian Institute of Astrophysics (IIA), Bengaluru** identified a **rare helium-rich star (A980)** exhibiting a rare **chemical composition**, challenging existing models of **stellar evolution and nucleosynthesis**.

What are the Key Facts Related to Star A980?

- A980 lies in the **Ophiuchus constellation,** about **25,800 light years** from Earth.
  - It shows the **first-ever detection of singly-ionized germanium (Ge II)** in an EHe star, with **germanium levels eight times higher than in the Sun**.
  - **About Star A980:** A980 is a cool **Extreme Helium (EHe) star,** a rare class of evolved stars made **almost entirely of helium with little to no hydrogen**, typically formed through the merger of a **helium-rich and a carbon-oxygen rich white dwarf.**
- **Stellar Models and Star A980: Stellar models explain how stars form, evolve, and create elements. They suggest heavy elements like germanium form in supernovae or AGB stars, not in Extreme Helium (EHe) stars.**
  - However, Star A980, an EHe star, shows unusually high germanium levels, challenging these models.
  - It suggests that element formation may happen during white dwarf mergers, a process not well covered in current theories, indicating the need to revise stellar evolution models.

Indian Institute of Astrophysics (IIA)

- **IIA** is a premier research institution under the **Department of Science & Technology (DST)**, dedicated to **astronomy, astrophysics, and related physical and engineering** sciences.
- It traces its origins to the **Madras Observatory** established in 1**786,** which was later relocated to **Kodaikanal in 1899.** It was **renamed as IIA in 1971** and shifted its **headquarters to Bengaluru in 1975.**

What is Stellar Nucleosynthesis?

Click Here to Read: Stellar Nucleosynthesis

UPSC Civil Services Examination Previous Year Question (PYQ)

Recently, scientists observed the merger of giant ‘blackholes’ billions of light-years away from the Earth. What is the significance of this observation? (2019)

(a) ‘Higgs boson particles’ were detected.
(b) ‘Gravitational waves’ were detected.
(c) Possibility of inter-galactic space travel through ‘wormhole’ was confirmed.
(d) It enabled the scientists to understand ‘singularity’.

Ans: (b)

PDF Refernece URL: https://www.drishtiias.com/printpdf/unique-stellar-chemistry-of-star-a980