HE 1153 - 0518 - Rare Ancient Stellar Fossil

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Why in News?

Astronomers have identified HE 1153−0518 as a rare ancient "stellar fossil" whose chemical makeup preserves clues about the universe's earliest generations of stars.

Announced by India's Ministry of Science and Technology and published in the *Monthly Notices of the Royal Astronomical Society* (MNRAS), the star was studied by researchers from the Indian Institute of Astrophysics (IIA), Bengaluru, and Dakshin Kamrup College using high-resolution data from the Subaru Telescope in Hawaii.

- **Classification-** HE 1153−0518 is a carbon-enhanced metal-poor star of the **CEMP-no** sub-class, meaning it is rich in carbon but low in heavy elements.
- **Chemical Profile-** It holds roughly one-thousandth of the Sun's iron abundance and lacks heavy neutron-capture elements, while showing high levels of carbon and sodium.
- **Evolutionary Clues-** Measurements indicate a low carbon isotopic ratio—pointing to internal gas mixing—and infrared signals hinting at possible circumstellar dust.
- **Window into the Early Universe-** The earliest massive stars formed a few hundred million years after the Big Bang and exploded as supernovae, seeding primordial gas with new elements.
- Ancient stars formed from that enriched gas act as fossils that help scientists trace events from more than 13 billion years ago and model early nucleosynthesis and Milky Way chemical evolution.

Reference

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