Wolf Rayet Stars

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In news : Recently, Indian astronomers have tracked a rare supernova explosion and traced it to one of the hottest kinds of stars called Wolf–Rayet stars or WR stars.

About Wolf–Rayet stars

- They are highly luminous objects a thousand times that of the Sun and have intrigued astronomers for long. They are massive stars and strip their outer hydrogen envelope which is associated with the fusion of Helium and other elements in the massive core
- WR stars are a rare heterogeneous set of stars with unusual spectra showing prominent broad emission lines of ionised helium and highly ionised nitrogen or carbon.
- The spectra indicate very high surface enhancement of heavy elements, depletion of hydrogen, and strong stellar winds.
- The surface temperatures of known Wolf-Rayet stars range from 30,000 K to around 210,000 K, hotter than almost all other kind of star

Efforts of Indian astronomers in this regard

- A team of astronomers from Aryabhatta Research Institute of Observational Sciences (ARIES), Nainital an autonomous institute under the Department of Science & Technology, Govt. of India with international collaborators have conducted the optical monitoring of one such stripped-envelope supernova called SN 2015dj hosted in the galaxy NGC 7371 which was spotted in 2015.
- They calculated the mass of the star that collapsed to form the supernovae as well as the geometry of its ejection.
- They have also found that the original star was a

combination of two stars, one of them is a massive WR star and another is a star much less in mass than the Sun.
- Supernovae (SNe) are highly energetic explosions in the Universe releasing an enormous amount of energy.

Significance of its recent tracking

- Tracking of certain types of massive luminous supernovae explosion can help probe these stars that remain an enigma for scientists
- Long-term monitoring of these transients opens the door to understand the nature of the exploding star as well as the explosion properties.
- It can also help enumerate the number of massive stars.

What is Supernova?

A supernova is a powerful and luminous stellar explosion. This transient astronomical event occurs during the last evolutionary stages of a massive star or when a white dwarf is triggered into runaway nuclear fusionIn other words a supernova is the explosion of a star. It is the largest explosion that takes place in space.

What Causes a Supernova?

A supernova happens where there is a change in the core, or center, of a star. A change can occur in two different ways, with both resulting in a supernova.