

Prelim Bits 04-11-2018

Planetary Nebula

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- A planetary nebula is formed when a star like our Sun, or a few times heavier, is in its dying days.

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- The term was coined by astronomers in the 19th century since the nebula looked like planets through their telescopes.

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- Indian astrophysicists have recently discovered planetary nebula called “NGC 6302” using Ultra -Violet Imaging Telescope (UVIT) onboard AstroSat.

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- The nebula is popularly known as the Butterfly Nebula.

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- They have discovered large ultraviolet lobes and jets that were hurled out from a dying star.

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AstroSat

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- AstroSat is a space observatory launched by ISRO in 2015.

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- It was launched with a lift-off mass of about 1500 kg by PSLV-C30.

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- It is India’s first dedicated multi wavelength space observatory.

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- Most other scientific satellites can observe only a narrow range of wavelength band.

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- But AstroSat enables the simultaneous multi-wavelength observations of various astronomical objects with a single satellite.

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- It observes universe in the optical, Ultraviolet, low and high energy X-ray regions of the electromagnetic spectrum.

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- The scientific objectives of ASTROSAT mission are:

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1. To understand high energy processes in binary star systems containing neutron stars and black holes
 2. Estimate magnetic fields of neutron stars
 3. Study star birth regions and high energy processes in star systems lying beyond our galaxy
 4. Detect new briefly bright X-ray sources in the sky
 5. Perform a limited deep field survey of the Universe in the Ultraviolet region

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Sovereign Blue Bond

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- The Republic of Seychelles has recently launched the world's first sovereign blue bond.
 - Blue Bond is a financial instrument designed to support sustainable marine and fisheries projects.
 - It is partially guaranteed by a US\$5 million guarantee from the World Bank (IBRD).
 - It is further supported by a US\$5 million concessional loan from the Global Environment Facility (GEF) which will partially cover interest payments for the bond.
 - Proceeds from the bond will also contribute to the World Bank's South West Indian Ocean Fisheries Governance.
 - It combines Public and private investment to mobilize resources for empowering local communities and businesses in achieving a transition to sustainable fisheries.
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Earth BioGenome Project

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- The Earth BioGenome Project aims to sequence the genomes of the roughly 1.5 million known animal, plant, protozoan and fungal species collectively known as eukaryotes.
- The project will characterize the genomes of all of Earth's eukaryotic biodiversity over a period of 10 years.
- It was officially launched in London with an estimated cost of US\$4.7 billion.
- The last project of a similar scale and importance was the 13-year Human Genome Project which was completed in 2003.
- **Eukaryotes** - The branch of complex life consisting of organisms with cells that have a nucleus inside a membrane—lag far behind the bacteria and archaea.

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Orion Spacecraft

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- Orion spacecraft is being designed by NASA to take humans deeper into space than ever before.
- It is the next-generation vehicle that the US is developing to carry astronauts to the Moon and on to Mars.
- It is scheduled to be launched in 2020.
- It is known as Exploration Mission-1 (EM-1).
- European industry has recently handed over a key part of the spaceship infrastructure to NASA.
- This is the first time America has gone outside its shores for such an important piece of human spaceflight hardware

- The European Service Module (ESM) is essentially Orion's back end.
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- ESM will provide propulsion, an electricity supply, thermal control, and all the gases and water needed to sustain any humans riding inside the capsule.
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Source: BusinessLine, Business Standard, First Post

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