

# NEWS TODAY

## Gravitational waves (GW) reveal 1st-of-its-kind merger between neutron star and mystery object

- Merger is officially known as **GW230529**, detected by the **LIGO-Virgo-Kagra collaboration** in 2023. The GW came from a merger of two objects:
  - ⊕ **Neutron Star** (formed when a massive star runs out of fuel and collapses)
  - ⊕ **Mystery object** whose mass lies in the 'mass gap'.
    - ◆ **Mass gap** is the range of mass between the **heaviest known neutron star** and the **lightest known black hole**.
- GWs are 'ripples' in space-time caused by some of the **most violent and energetic processes in the Universe** that propagate in all directions away from the source. Predicted in **Einstein's General Theory of Relativity (1916)**.
  - ⊕ **Its key Features includes:**
    - ◆ Travel at the speed of light.
    - ◆ **Produced by:** Cataclysmic events such as colliding black holes, stars exploding at the end of their lifetimes, colliding neutron stars, etc.
    - ◆ **GWs' first detection:** In 2015 and detected at the **Laser Interferometer Gravitational-Wave Observatory (LIGO)**.
- **GWs' significance:** It carries information about their origins; clues to the nature of gravity itself; information about the universe that cannot be observed with electromagnetic waves etc.

### About LIGO

- Consists of **two interferometers**, each with two **4 km long arms** arranged in the **shape of an "L"**. These instruments act as 'antennae' to detect GWs.
- Comprises **stable high-power lasers**, **precisely figured mirrors**, **ultraquiet vibration isolation systems**, and **sophisticated hierarchical feedback systems**.
- **LIGO-India:** It will be built by the **Department of Atomic Energy (DAE)** and the **Department of Science and Technology (DST)**, in Maharashtra.

## Supreme Court expresses concern over misuse of content on social media platforms

- SC denounced spread of **factually incorrect and unfounded statements** made regarding pending cases on social media platforms.
- **Reasons for Misuse of social media**
  - ⊕ **Internet growth** coupled with **anonymity**.
  - ⊕ **Rise in user base**.
  - ⊕ **Ambiguity in law**, like, on responsibility of social media platforms.
  - ⊕ **Others:** Rise of **artificial intelligence (AI)** for e.g., deepfake; absence of robust grievance redressal mechanism, etc.
- **Negatives Impacts of Misuse**
  - ⊕ **Prejudiced Narratives:** based on incomplete or inaccurate information.
  - ⊕ **Excessive Trolling**, unjustified public opinions.
  - ⊕ **Defamation and Invasion of Privacy:** Morphed images of women, revenge porn, disrespect to religious sentiments, etc.
  - ⊕ **Fear of bias in Judicial Decisions:** pressure to align with public sentiment.
  - ⊕ **Others:** spread of disharmony, financial frauds, incitement of violence, etc.
- **Steps taken by government to curb misuse**
  - ⊕ Information Technology (**Intermediary Guidelines and Digital Media Ethics Code**) Rules 2021.
  - ⊕ PIB's **Fact Check Unit** under IT Rules 2021.
  - ⊕ Govt advisory **mandating intermediaries to communicate** prohibited content
  - ⊕ **Blocking OTT platforms** publishing obscene, vulgar content etc.
- **Way ahead**
  - ⊕ **Invest in R&D** to improve deep fake detection techniques.
  - ⊕ **Collaboration** between governments, tech companies, and civil society organizations etc.

## Indian expatriate could become the first Indian space tourist

- **Blue Origin's** (American Space startup) **NS-25 mission** will take six passengers to space tourism.
  - ⊕ Space tourism refers to **traveling into space for recreational** purposes.
- **Types of Space tourism:**
  - ⊕ **Suborbital space flights** (altitude of 100 km referred as **Karman Line**),
  - ⊕ **Orbital Space Flights** (altitudes over 400 kilometers) and
  - ⊕ **Lunar space tourism** (full trips to moon).
- According to estimates, **global space tourism market size is** expected to grow at compound annual growth rate (CAGR) of 44.8% from 2024 to 2030.
- **Factors Responsible for Growth:**
  - ⊕ **Advancements in Technology:** Reusable rockets, improved spacecraft.
  - ⊕ **Public Interest and Awareness:** Media coverage, documentaries.
  - ⊕ **Diverse Offerings:** space hotels, **leisure time in space**.
  - ⊕ Reduced Costs, economies of scale.
  - ⊕ **Innovative Business Models:** Partnerships, crowdfunding.
  - ⊕ **Government Support:** Incentives, regulatory frameworks.
- **Concerns:** Space debris pollutes Earth's atmosphere, ethical consideration- affordable by rich only, regulatory issues such as who's liable in case of accident, health issues due to microgravity effects, radiation exposure etc.
- **Existing Legal Framework:** Outer Space Treaty (1967), Convention on International Liability for Damage Caused by Space Objects etc.
- **Way Forward:** Promoting inclusive and green space tourism, developing comprehensive regulatory framework etc.

## Indian Institute of Science (IISc) designed novel hydrogel to remove Microplastics from water

- **Hydrogel** has a unique **intertwined polymer network** that can bind the microplastic and degrade them **using Ultraviolet (UV) light irradiation**.
  - ⊕ It consists of three different polymer layers – **chitosan, polyvinyl alcohol and polyaniline**.
  - ⊕ These **polymers** are combined with the **nanoclusters [copper substitute polyoxometalate (Cu-POM)]**.
    - ◆ **Nanoclusters** act as a catalyst that can use UV light for degradation.
  - ⊕ It showed high efficiency during research.
- **About Microplastics**
  - ⊕ Small plastic fragments typically **less than 5 millimeters long**.
  - ⊕ Categories of **microplastics:**
    - ◆ **Primary:** Tiny particles designed for **commercial use** (for e.g., microbeads in cosmetics, toothpaste etc.), microfibers shed from clothing and other textiles, such as fishing nets.
    - ◆ **Secondary:** These are particles that result from the **breakdown of larger plastic items**, such as water bottles. This breakdown is caused by exposure to environmental factors, **mainly the sun's radiation and ocean waves**.
- **Impacts**
  - ⊕ **Environment:** Can be mistakenly consumed by marine organisms (toxic for them) and will disturb whole food chain.
    - ◆ It has reached to the remote areas like **Antarctica**.
  - ⊕ **Human Health:** Gastrointestinal issues, Endocrine disruption, Respiratory problems, allergy etc.

### Initiative Taken

- **Global**
  - ⊕ **Global Partnership on Plastic Pollution and Marine Litter (GPML)**, launched at the United Nations Conference on Sustainable Development (Rio+20) Summit, 2012
  - ⊕ **International Convention for the Prevention of Pollution from Ships (MARPOL)**, adopted by International Maritime Organization in 1973
- **India**
  - ⊕ **Single-use plastics ban** with effect from 2022.
  - ⊕ **Extended Producer Responsibility (EPR)** for plastic under Plastic Waste Management Rules, 2016
  - ⊕ **Un-Plastic Collective**, co-founded by the Confederation of Indian Industry (CII), UNEP and WWF-India

## Volcanic Vortex Rings (VVR) observed from the Mount Etna

- **VVR**, also known as volcanic smoke rings, are generated when gas, predominantly water vapor, is released rapidly through a circular vent in the volcanic crater.
- **Mt Etna** is the world's most active **volcano**, located on the east coast of Sicily (Italy).
  - ⊕ Also, it is the largest volcano of Europe.
  - ⊕ It lies in the **highly active tectonic zone of Mediterranean Sea region** which is part of the Mid-continental Volcanic Belt.
    - ◆ The other important belt includes **Circum pacific (ring of fire)** and **Mid-Atlantic belt**.
- **Why Mediterranean Sea region has highly active tectonic zone?**
  - ⊕ Located **on the convergent boundary between the Eurasian and African continental plates**, and other minor plates.
  - ⊕ Convergence of plates creates **subduction zone** in western part of sea, leading to formation of volcanoes.
    - ◆ **A subduction zone** is a collision between two of Earth's tectonic plates, where one plate sinks into the mantle underneath the other plate.
  - ⊕ Chains of submarine volcanoes have been created in the sea.
  - ⊕ The important volcanoes in the region are **Mt Vesuvius, Stromboli, etc.**

## Election Commission of India for the first time provides facilities of home voting in coming 2024 election

- The step is in line with **Election Commission (EC) motto 'No voter is left behind'**.
- **Home Voting Facility:**
  - ⊕ Under this, **voting from home takes place** with involvement of a full contingent of polling staff and security personnel with **secrecy of voting** diligently maintained.
  - ⊕ **Beneficiaries:**
    - ◆ **Persons with disabilities (PwDs) meeting 40% benchmark disability.**
    - ◆ **Senior citizens aged above 85 years.**
- **Other Steps by EC to make voting inclusive:**
  - ⊕ Ease of voting by **abolishing Form-M** for kashmiri migrants residing at Jammu and Udhampur.
  - ⊕ **SVEEP** (Systematic Voter's Education and Electoral Participation) to engage PwDs and also sensitise their friends, families, polling officials, etc.
  - ⊕ Proposed **Multi-Constituency Remote Electronic Voting Machine (RVM)**: It would enable migrant voters to exercise their vote from their current place of residence.
  - ⊕ **Postal ballot**: It allows **votes being sent by post**. following Persons are entitled to vote by post:
    - ◆ **special voters.**
    - ◆ **service voters.**
    - ◆ voters on **election duty** and.
    - ◆ electors subjected to **preventive detention**
  - ⊕ **Proxy voting**: It allows registered elector to **delegate his voting rights to a representative** he nominates. Available for **service voters**.

### Service voters include:

- Member of **armed forces**;
- Member of **police force** of a State, who is serving outside that State;
- Person who is employed under Government of India, in a **post outside India**.
- Member of a **force to which Army Act, 1950** is applicable.

## Also in News



### Kuchipudi Dance

- Reports highlighted that artists of **Kuchipudi dance struggling for survival**.
- **About Kuchipudi**
  - ⊕ Classical Indian dance form, originated in the Kuchipudi village of Andhra Pradesh.
  - ⊕ **Key Features:**
    - ◆ Known for its quick moves, lively eye expressions, etc.
    - ◆ **Trangam** (dance move performed on the edge of a brass plate with the help of feet).
    - ◆ **Has 2 forms-** traditional musical dance-drama and the solo dance.
  - ⊕ **Siddhendra Yogi**, a Vaishnava poet and visionary, conceived the Kuchipudi style of Yakshagaana (folk dance of Karnataka) in the 17th century.



### Asian Development Bank (ADB)

- ADB in its **Asian Development Outlook (ADO)** report forecasted India's growth at **7.0%** this year and **7.2%** next year.
  - ⊕ **ADO is yearly report by ADB** that analyzes economic and development issues in developing countries across Asia and Pacific.
- **About ADB**
  - ⊕ **Established:** 1966
  - ⊕ **Headquarters:** Manila, Philippines
  - ⊕ **Membership:** 68 members including India
  - ⊕ **Activities:** Provides loans, technical assistance, grants, and equity investments for social and economic development projects.
  - ⊕ **largest shareholders:** Japan and United States.
  - ⊕ **Other prominent reports published:** Asia-Pacific Trade Facilitation Report 2024: Asia Bond Monitor etc.



### Doxxing

- Incidents of Doxxing are increasing over internet.
- **About Doxxing**
  - ⊕ The term "doxxing" is derived from phrase "dropping dox (documents)".
  - ⊕ It refers to **collection of a user's private information**, across multiple platforms (including social media) by an unauthorized individual and
    - ◆ then **publishing the information** in an attempt to shame or embarrass user.
  - ⊕ Conducted by researching **public databases, hacking, or through social engineering**.
  - ⊕ **Prevention:** Adjust social media settings, use strong passwords, report through National Cyber Crime Reporting Portal, etc.



### Plankton, Aerosol, Climate, ocean Ecosystem (PACE) Satellite

- NASA's PACE data on ocean, atmosphere, and climate is now available to the public.
- **About PACE:**
  - ⊕ Placed in a **Sun-synchronous orbit**, which means that it will always be synced to the same position relative to the Sun.
  - ⊕ **Sensors:** OCI (Ocean Colour Instrument), HARP-2 (Hyper-Angular Rainbow Polarimeter-2) and SPEXone (Spectro-Polarimeter for Planetary Exploration).
  - ⊕ **Key Objectives**
    - ◆ Understanding **how the ocean and atmosphere exchange carbon dioxide**.
    - ◆ Revealing how **aerosols** might fuel phytoplankton growth in the surface ocean.



### Sudan Conflict

- A **year-long conflict in Sudan** unleashed waves of ethnic violence and driven millions into **extreme hunger** and creating large **displacement crisis**.
- **Other conflict areas in Africa:**
  - ⊕ **Libya:** Forces fight to capture rich oil fields.
  - ⊕ **Ethiopia:** Tigray war.
  - ⊕ **Somalia:** Conflict with Al-Shabaab.
  - ⊕ Democratic Republic of Congo: **Rebel group called March 23 Movement (M23)**.



### Indian Pharmacopoeia Commission (IPC)

- Recently, Indian Pharmacopoeia Commission (IPC) has issued a drug safety alert over the use of the anti-inflammatory drug Nimesulide.
- **About IPC**
  - ⊕ Autonomous Institution of the Ministry of Health and Family Welfare.
  - ⊕ Basic function is to update regularly the **standards of drugs**.
  - ⊕ It publishes **Indian Pharmacopoeia (IP)**.
    - ◆ IP prescribes standards for identity, purity and strength of drugs essentially required from health care perspective of human beings and animals.
  - ⊕ It further promotes rational use of **generic medicines** by publishing **National Formulary** of India.



### Renewable Energy Technology Action (RETAP)

- First virtual **Joint working group meeting** of RETAP was held between representatives of India and USA.
- **About RETAP**
  - ⊕ **RETAP** was announced by India and US jointly in 2023 under **Strategic Clean Energy Partnership (SCEP)**.
    - ◆ **SCEP**, launched in 2021, is collaborative effort between India-US to **accelerate clean energy innovation and deployment**.
  - ⊕ **RETAP's initial focus** is to be on **green/clean hydrogen, wind energy, ocean/tidal energy** etc.
  - ⊕ **Work is guided by five themes: Research & Development, Piloting & Testing of Innovative Technologies** etc.



### Whooping cough

- Number of cases of whooping cough have been rising in China.
- **About Whooping Cough**
  - ⊕ It is highly contagious **respiratory tract infection**.
  - ⊕ **Caused by:** Bordetella pertussis bacteria. The bacteria attaches to **cilia (tiny, hair-like extensions)**, part of **upper respiratory system**.
  - ⊕ It is **only found in humans**.
  - ⊕ Spread easily from person to person **through the air**.
  - ⊕ **Symptoms:** Runny nose, Nasal congestion Red watery eyes, Fever etc.
  - ⊕ In India, **Mission Indradhanush** provides immunization protection against **Whooping Cough**.

## Places in News



### Mali (Capital: Bamako)

- Mali has **banned the media** from reporting on activities of political parties and associations.
- **Political Boundaries**
  - ⊕ **Landlocked** country of **western Africa**.
  - ⊕ Mainly lies in **Sahel region**.
    - ◆ Sahel is a transitional zone between the **arid Sahara** (desert) to the north and the belt of humid savannas to the south.
  - ⊕ Bounded by **Algeria** (north), **Niger** and **Burkina Faso** (east), **Côte d'Ivoire** and **Guinea** (south), and **Senegal** and **Mauritania** (west).
- **Geographical features**
  - ⊕ **Major River:** Niger and Sénégal.
  - ⊕ **Highest point:** Hombori Tondo.

