JUICE Probe’s Double Slingshot Manoeuvre

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Recently, the European Space Agency's (ESA) **Jupiter Icy Moons Explorer (JUICE) Probe** performed a double **slingshot manoeuvre**, using the gravitational forces of both the Moon and Earth in quick succession.

- JUICE first flew **434 miles** from the **Moon's surface**, then **4,229 miles** from **Earth's surface**. The Moon's gravity slightly altered JUICE's path, allowing a significant gravity assist from Earth.
    - This is called the **"gravity assist" method** which saves **propellant** by using the gravitational pull of **celestial bodies** to alter the spacecraft's speed and trajectory.
    - Successful execution of the slingshot put JUICE on course to reach **Jupiter** by 2031 with the help of three further single gravity assists: Venus in 2025, and then the earth again in 2026 and 2029.
- **JUICE Probe:**
    - It was launched in **April 2023** and aims to explore **Jupiter** and its three large icy moons viz. **Callisto, Europa, and Ganymede**.
    - It will perform fly-bys of its three large icy moons and finally orbit **Ganymede** to study the potential to support life.
    - Following up on NASA’s 1990s **Galileo mission** to Jupiter, the ESA-led JUICE mission will orbit Jupiter.
        - **Other** important missions to study Jupiter are **Juno Mission (NASA)**, **Cassini-Huygens (NASA and ESA)** and **Galileo (NASA)**.

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