

Micrometeoroids and Orbital Debris

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Micrometeoroids and Orbital Debris Latest News

Recently, a piece of debris struck the Chinese crewed vehicle Shenzhou-20, causing a minor crack in the window of its return capsule which raised the concerns regarding protections of astronauts from Micrometeoroids and Orbital Debris (MMOD) that orbit the earth.

About Micrometeoroids

- Micrometeoroids are typically **extremely small, with sizes ranging** from a few micrometres (a millionth of a meter) to up to about **two millimetres**
- **Origin:** Most of them originate from **collisions between asteroids** in the Asteroid belt (between Mars and Jupiter) with a small portion coming from comets.
- **Speed:** They travel at **extremely high velocities** (about 11 to 72 km/s).
- **Distribution:** They exist **everywhere in space**, but due to the Earth's gravity pull their distribution is slightly higher near our planet.

- The micrometeoroids in Earth's orbital environment are **effectively uncountable** and they deliver billions of impacts to orbiting spacecraft annually.

About Orbital Debris

- They are also called **space debris, space junk or space trash**.
- They consist of **human-made objects in the Earth's orbit** which no longer serves any useful purpose.
- **Origin:** All orbital debris originated primarily from **exploded rocket stages**, satellites, accidental collisions and **intentional anti-satellite weapon tests**.
- The typical average speed of orbital **debris is about 10 km/s**.
- Orbital debris is mostly concentrated in a "shell" **around the Earth in Low earth Orbit** (LEO) ranging from **about 200 km up to 2,000 km altitude**.

Source: **TH**

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