Quadrantid Meteor Shower

Why in News?

The world is all set to witness the 1st Quadrantid meteor shower of the year 2025.

Meteor shower
• It is a celestial event in which a *number of meteors* are observed to radiate, or originate, from one point in the night sky called Radiant. • **Caused by** – *Streams of cosmic debris called meteoroids* entering Earth's atmosphere at extremely high speeds on parallel trajectories.

- **Name Quadrantids** – It comes from the obsolete *constellation Quadrans Muralis*, which was named in 1975 by French astronomer JJ Lalande.
- **Origin** – It possibly emerged from *asteroid 2003 EH1*.

***Quadrans Muralis** is located between the constellations of Bootes and Draco (near the end of the handle of the "Big Dipper").*

***Asteroid 2003 EH1** is believed to be a fragment of an extinct comet that broke down in 1490-91, which takes 5.52 years to orbit the Sun once.*

- **Observation –** It was *1st seen in 1825* by Belgian astronomer Adolphe Quetelet.
- **Fireball meteors** – These meteors usually lack persistent trains but often *produce bright fireballs*.
- They are known for their larger explosions of light and color with *magnitudes brighter than -3*.
- It persists longer than an average meteor streak due to the fireballs which originate from larger particles of material.
- **Speed** – They enter the Earth's atmosphere at high speed, typically *around 40km per second*.
- **Visibility -** In its peak activity, observers can spot ***60 to 120 meteors per hour*** and the visibility depends mainly on location and timing.

***Quadrantid Meteor Shower in 2025** favour the western regions of North America during pre-dawn hours. They are likely to shine bright as Earth's forward-facing side hits them at high speed.*

Asteroid	A relatively small, inactive, rocky body *orbiting the Sun*.
Comet	A relatively small, at times active, object whose ices can vaporize in sunlight forming an atmosphere (coma) of dust and gas and, sometimes, a *tail of dust and/or gas*.
Meteoroid	A small particle *from a comet or asteroid* orbiting the Sun.
Meteor	The light phenomena which results when a meteoroid enters the Earth's atmosphere and vaporizes; *a shooting star*.
Meteorite	A meteoroid that survives its passage through the Earth's atmosphere and *lands upon the Earth's surface*.

References

1. The Indian Express| 1st Quadrantid Meteor Shower of 2025
2. NASA| Quadrantids Meteor Shower

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