Quadruple Star System

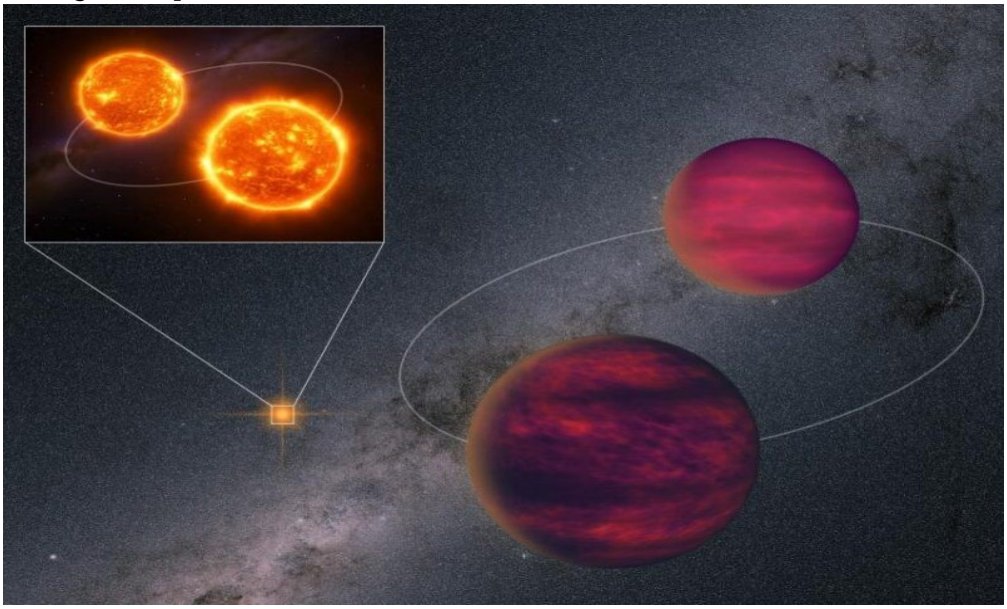
Prelims – *Current events of National and International importance| Science and Technology.*

Why in News?

Recently, a team of scientists has discovered a rare quadruple star system in the milky way galaxy.

Milky Way Galaxy or Akasha Ganga *is a huge collection of stars, dust and gas. It is called as a spiral galaxy because, when view it from the top or bottom, it would look like a spinning pinwheel.*

- The system known as **UPM J1040−3551 AabBab**
- **Composition –** It consists of a **pair of cold brown dwarfs orbiting a pair of young red dwarf stars**.
- **Location –** 82 light-years from Earth in the constellation Antlia.
- **Association with brown dwarfs –** This is the 1st quadruple system ever discovered with a pair of **T-type brown dwarfs** orbiting 2 stars.
- Smaller stars and brown dwarfs are usually single, and the chance of a low-mass brown dwarf having a companion is below 5%.



- It contains a *pair of young red dwarfs, the most common type of stars in the Milky Way*, which are much *brighter than their companions.*
- **Significance of discovery –** 2 brown dwarfs, which are about the size of Jupiter, in the system emit almost **no visible light.**
- It can help astronomers better understand the conditions that are necessary for the formation of stars and planets.
- The abundance and distribution of brown dwarfs help astronomers to understand mass distribution in the universe, much of which remains unseen as dark matter.

Brown Dwarfs

- **Nature –** They are curious celestial bodies that share some similarities with stars and others with planets.
- **Formation –** These objects form like stars from collapsing clouds of gas and dust.
- **Detection –** Brown dwarfs are difficult to detect as they are very cold and faint.
- Astronomers search for them in multiple-star systems, where brighter companion stars help in studying their properties.
- **Size –** 7 0 times more massive than Jupiter.
- **Features –** Atmospheres similar to gas giant planets such as Jupiter and Saturn, which consist of clouds and molecules like H2O.
- **Failed stars – *They do not have enough mass to consistently fuse hydrogen***, a process that heats a star and makes it shine.
- Hence, they are often known as **failed stars.**

References

1. The Indian Express| Rare Quadruple Star System
2. Royal Astronomical Society| Unlock Mystery of Brown Dwarfs

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