



**KAMARAJ IAS ACADEMY**  
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# Cosmic Filaments

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**Context:** Researchers from the **University of Oxford** reported a **cosmic filament** roughly **50 million light-years long**, traced by at least **14 galaxies**.

## About Cosmic Filaments

- **Definition:** Cosmic or galaxy filaments are **largest thread-like structures** in the **cosmic web**.
- **Scale:** Single filaments can span **hundreds of millions of light-years**.
- **Formation:** Result from **gravitational attraction** pulling gas, dark matter, and galaxies into **long, thin strands** linking **galaxy clusters**.
- **Relationship with Voids:** Surround **vast empty regions** of space called **cosmic voids**.

## Importance in Cosmology

1. **Galaxy Formation & Distribution:** Filaments help astronomers understand **how galaxies form and cluster**.
2. **Matter Flow:** Act as **highways feeding gas and dark matter** into dense regions, influencing the **growth of galaxy clusters**.
3. **Cosmic Web Mapping:** Provide insight into the **large-scale structure of the universe**.

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