



## Gaia BH3 Black Hole

[Source: TH](#)

**Astronomers** have discovered [Gaia BH3](#), the **largest known stellar-mass black hole** in the **Milky Way**, located in the [constellation Aquila](#).

- This marks the **3rd black hole** found using the [Gaia telescope](#) of the **European Space Agency**. (Previous discoveries: **Gaia BH1 in 2022 and Gaia BH2 in 2023**)
- **Gaia BH3** has a mass **33 times that of the Sun**, making it the most massive stellar-mass black hole in the Milky Way.
  - **A stellar-mass black hole** is a type of black hole that forms when **massive stars**, weighing **5 to 10 times the Sun**, collapse.
- **Gaia BH3 is not actively pulling in matter and does not emit X-rays** showing evidence of "silent" black holes **without X-ray emissions**.
  - **Rings of gas and dust** around black holes emit **light, including X-rays**, making them **detectable**.
- The [2020 Nobel Prize in Physics](#) was awarded for confirming **black hole formation** as a key prediction of [general theory of relativity](#) and discovering a **supermassive compact object** at the center of our [Milky Way galaxy](#).

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# BLACK HOLES

## ABOUT

- A place in space with **extremely high gravity pull**; even light can't escape (hence, **invisible**)
- The strong gravity is due to matter being squeezed into a tiny space

The term 'black hole' was coined in the mid-1960s by American physicist John Archibald Wheeler

## DETECTION

- By seeing how stars very close to black holes act differently than other stars
- In April 2019, scientists at the **Event Horizon Telescope Project** released the first-ever image of a Black Hole (shadow, more precisely)

## Albert Einstein and Black Hole

- First predicted their existences in **Theory of General Relativity**
- It showed that when a massive star dies, it leaves behind a small, dense remnant core

India's first dedicated satellite, **AstroSat** observed for the very first-time rapid variability of high energy X-ray emission from a black hole system

## TYPES

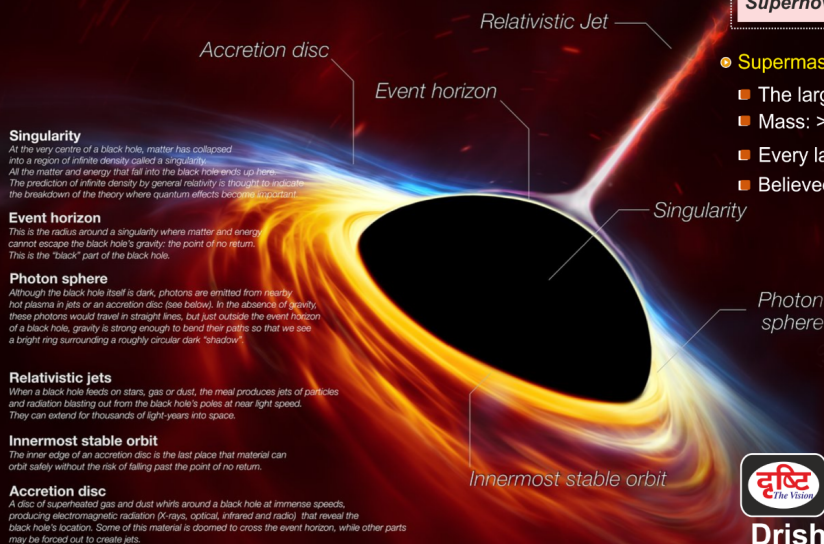
- **Miniature (Hypothetical):**
  - The smallest; size of just 1 atom
  - Mass: varies from 1/100th of a milligram to the mass of a large mountain
  - Believed to be formed when universe began
- **Stellar:**
  - Mass: **20x the mass of sun**
  - Believed to be formed due to **Supernovae explosion**

Supernova is an exploding star that has reached the end of its life

- **Supermassive**
  - The largest
  - Mass: >1 million suns together
  - Every large galaxy has a supermassive black hole at its centre
  - Believed to be made at the same time as their home galaxy

Sagittarius A is the supermassive black hole at the centre of Milky Way (mass: ~about 4 mn suns)

The Sun will never turn into a black hole as it is not big enough to make a black hole



Read More: [Ultramassive Black Hole](#)

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