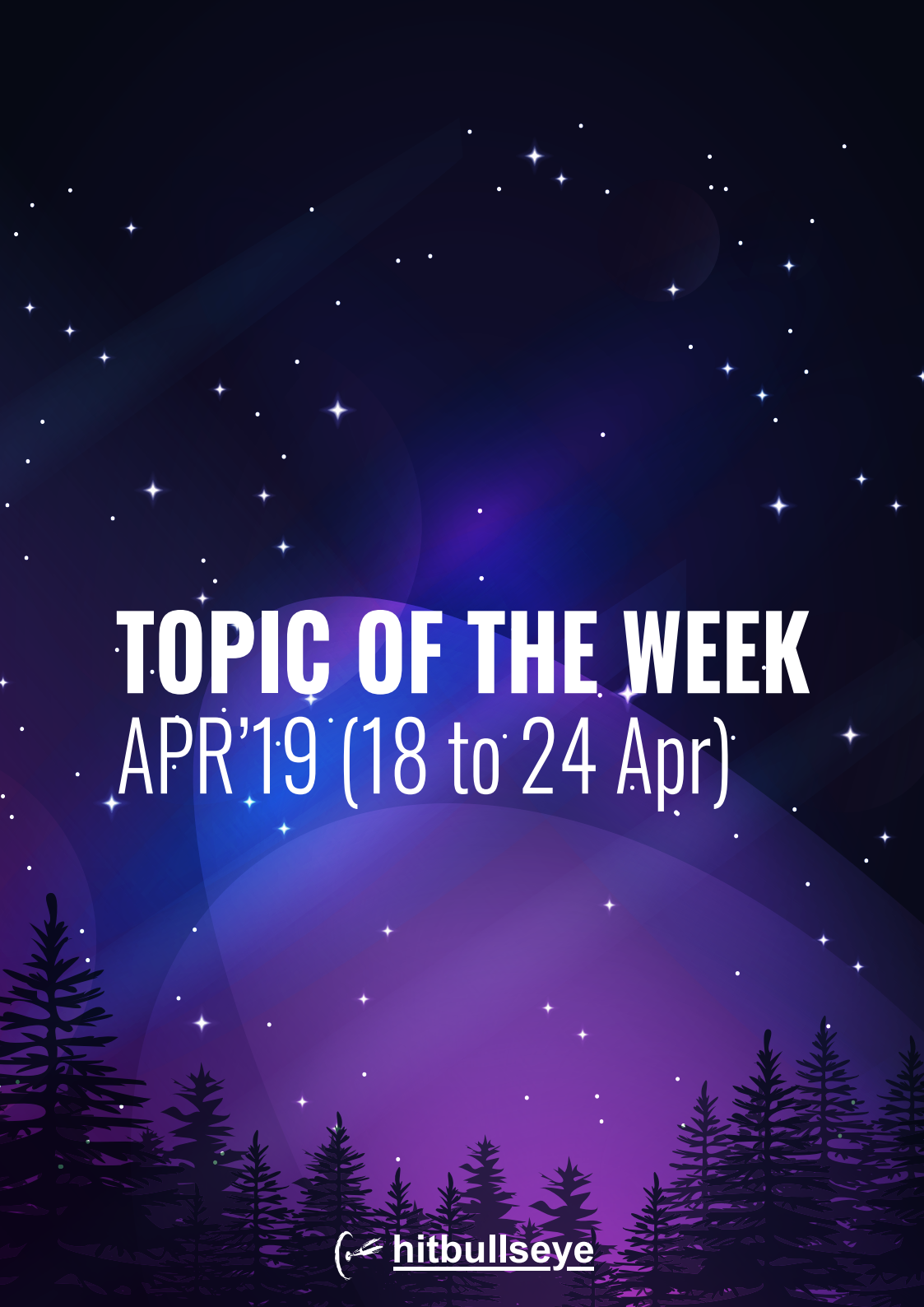
TOPIC OF THE WEEK

APR'19 (18 to 24 Apr)



hitbullseye

Week: 18th to 24th April 2019

SEEING THE UNSEEABLE

The first object considered to be a black hole is Cygnus X-1. Rockets carrying Geiger counters discovered eight new X-ray sources. In 1971, scientists detected radio emissions coming from Cygnus X-1, and a massive hidden companion was found and identified as a black hole. Albert Einstein first predicted black holes in 1916 with his general theory of relativity. The term "black hole" was coined in 1967 by American astronomer John Wheeler, and the first one was discovered in 1971. A black hole is a place in space where gravity pulls so much that even light cannot get out. The gravity is so strong because matter has been squeezed into a tiny space. This can happen when a star is dying. Because no light can get out, people can't see black holes. They are invisible. Space telescopes with special tools can help find black holes. The special tools can see how stars that are very close to black holes act differently than other stars.

Black holes are of different types like small, big, stellar and etc. The largest black holes are called "supermassive." These black holes have masses that are

more than 1 million suns together. Scientists have found proof that every large galaxy contains a supermassive black hole at its center. The supermassive black hole at the center of the Milky Way galaxy is called Sagittarius A. It has a mass equal to about 4 million suns and would fit inside a very large ball that could hold a few million Earths. It is said If a star passes too close to a black hole, it can be torn apart.

In 1974, Hawking put forward the theory that a black hole does in fact emit something when you throw quantum mechanics into the equation. He hypothesized that black holes had an "apparent" horizon, across which matter and light could move, while leaving behind particles — now also known as Hawking radiation — that could leave the black hole. Just days before he passed away, Hawking had been working on the topic, trying to confirm a theory. He concluded that the event horizon was surrounded by a ring of photons that could reflect the information from the black hole. So far, however, this is just a hypothesis. Until recently, there had been no evidence to confirm Hawking's suspicions. However, researchers now believe they've found the equivalent of Hawking radiation in laboratory experiments. A study by

researchers from the Weizmann Institute in Israel has demonstrated that they've come a step closer to generating Hawking radiation in an optical black hole.
As stated from Stephen Hawking, “Gravitational waves provide a completely new way of looking at the universe. The ability to detect them has the potential to revolutionize astronomy”. And this is true, for gravitational waves allow physicists to show scientists new features of cosmic objects, thus changing the ordinary person’s view of stars. Fortunately, there are many more uses for gravitational waves. It gives us the ability to study neutron stars with clearer measurements. Gravitational waves would especially be helpful in studying neutron stars since it gives clues of what happens to regular matter under such harsh conditions. It also carries information about the interior of neutron stars all the way to earth, helping us better understand neutron stars as a whole.

Black holes can have a profound impact on society as a whole, through capabilities to study new characteristics of cosmological objects, or even to formulate interesting theories of the universe. They also give physicists the ability to view the universe with a different perspective

due to its strong gravitational force that has the strength to warp space-time. When new discoveries arise and are released to the public, there is a possibility that it will change our current view of the universe as a whole. It may even change what we understand about the laws of science or even about black holes themselves. There's no telling of the future and what we'll discover (unless we formulate the theory of everything), but tomorrow's discoveries can warp the way we study astrology.

While many religious people hold the view that during the life cycle of stars , stars change from one entity to another , this change takes millions of years . One of these is the black hole and the black hole is the most fearful. So far Christian theology and Christian philosophy has said very little about these black holes.

However, very recently Katie Bouman is the name in everyone's mind. She is a postdoctoral fellow at Harvard who helped develop the code to find the black hole needle in the haystack of data collected from the effort. This photo shows the first time she saw the results of that work, with the black hole image on her computer screen. The research group of 200 members used the

Event Horizon Telescope to observe the black hole. Because of the size of the object involved, they needed a telescope with an angular resolution the same size as its event horizon. In a press conference held in Brussels, scientists and astronomers from the Event Horizon Telescope revealed the picture of the black hole, and capturing it was no easy task. "What looks like a bright orange "ring of fire" is actually a circling mass of superheated gas falling into the black hole. The light escaping from the halo is immeasurably bright, brighter than all the stars in our galaxy combined. And at the center is of course the event horizon, where all light goes to die, falling inescapably to what end we don't yet know."

After this epic achievement ,which again Proved that Einstein was right and scientists are more eager to know about Black hole. For example upcoming future project — such as the European Space Agency's Laser Interferometer Space Antenna mission, which is scheduled to launch in the mid-2030s — will aim to spot gravitational waves generated by mergers of supermassive black holes. So, we can say many new

things are still waiting to be discovered to create many more euraka moments.

For reference:-

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