

International

Scientists spot black hole so huge it 'shouldn't even exist'

LB-1 has mass 70 times greater than the Sun

BEIJING: Astronomers have discovered a black hole in the Milky Way so huge that it challenges existing models of how stars evolve, researchers said yesterday. LB-1 is 15,000 light years from Earth and has a mass 70 times greater than the Sun, according to the journal *Nature*. The Milky Way is estimated to contain 100 million stellar black holes but LB-1 is twice as massive as anything scientists thought possible, said Liu Jifeng, a National Astronomical Observatory of China professor who led the research. "Black holes of such mass should not even exist in our galaxy, according to most of the current models of stellar evolution," he added.

Scientists generally believe that there are two types of black holes. The more common stellar black holes - up to 20 times more massive than the Sun - form when the centre of a very big star collapses in on itself. Supermassive black holes are at least a million times bigger than the Sun and their origins are uncertain. But researchers believed that typical stars in the Milky Way shed most of their gas through stellar winds, preventing the emergence of a black hole the size of LB-1, Liu said. "Now theorists will have to take up the challenge of explaining its formation," he said in a statement.

'New kind' of black hole

Astronomers are still only beginning to grasp "the abundance of black holes and the mechanisms by which they form," David Reitze, a physicist at the California Institute of Technol-

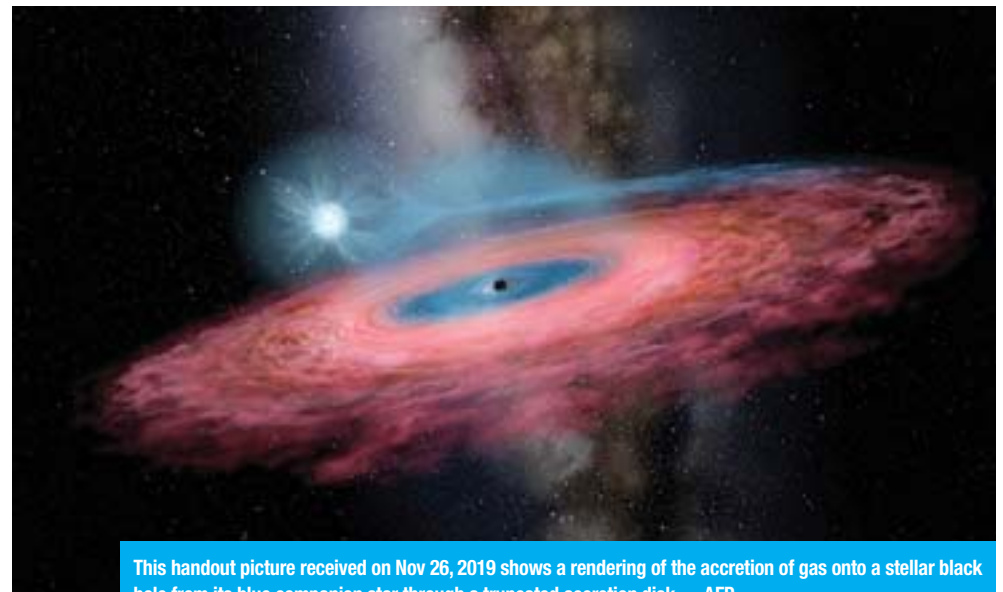
ogy (Caltech) who was not involved in the discovery, told AFP. The Laser Interferometer Gravitational-Wave Observatory at Caltech, overseen by Reitze, had previously detected ripples in spacetime that suggested the possibility of black holes in distant galaxies that were much bigger than what was thought possible.

Stellar black holes are usually formed in the aftermath of supernova explosions, a phenomenon that occurs when extremely large stars burn out at the end of their lives. LB-1's large mass falls into a range "known as the 'pair instability gap' where supernovae should not have produced it", Reitze said. "That means that this is a new kind a black hole, formed by another physical mechanism!"

100 million black holes

LB-1 was discovered by an international team of scientists using China's sophisticated LAMOST telescope. Additional images from two of the world's largest optical telescopes - Spain's Gran Telescopio Canarias and the Keck I telescope in the United States - confirmed the size of LB-1, which the National Astronomical Observatory of China said was "nothing short of fantastic". Scientists have tended to find black holes by detecting the X-rays they emit.

But this method has limited usefulness because only a small number of black hole systems where the companion star orbits very close to the black hole would emit detectable X-rays, Liu said at a press conference. Instead, the team that



This handout picture received on Nov 26, 2019 shows a rendering of the accretion of gas onto a stellar black hole from its blue companion star through a truncated accretion disk. —AFP

discovered LB-1 tracked the movements of "huge numbers of stars over a long period of time", before identifying LB-1 based on the motion of its companion star, Liu said. This method has been used for decades without much success due to the limitations of the available equipment, Liu added.

But LAMOST, constructed between 2001 and 2008 in north China's Hebei province, allows

researchers to detect up to 4,000 stars simultaneously with each exposure, making it one of the world's most powerful ground-based telescopes. Liu told AFP the method used to discover LB-1 could help scientists identify many more black holes in the future. Out of the 100 million black holes believed to exist in our galaxy, Liu said, only 4,000 "can give you X-rays that can be detected by us". —AFP

Climate summit host Spain struggles on environment

MADRID: Spain wanted to make a splash on the international scene by agreeing to host next month's COP25 climate summit at the last minute after Chile pulled out. But experts say green issues have not been a priority in the country, which has a poor environmental track record. Only 2.3 percent of all Spaniards consider the environment as one of the country's main problems, according to the latest survey by the state-run Centre for Sociological Studies (CIS). That compares to 56.9 percent who listed unemployment and 21.2 percent who said corruption were major concerns.

Like other southern European nations, Spain does not have a significant green party and environmental issues were not in focus during the campaign for the Nov 10 general election. They were not even among the themes addressed during the only TV debate held before the polls. "Environmental problems are not a priority in the political agenda," said Claudio Cattaneo, an environmental sciences

professor at the Autonomons University of Barcelona. "Social inequalities are very high in Spain so the political demands (of the left) are more oriented towards the right to housing than to ecology."

The environment accounted for just 0.44 percent of the debate in parliament between 2011 and 2016, according to a tally kept by the Spanish Society of Ornithology, an NGO dedicated to protecting birds and their habitats. While ecological issues became a key political theme in Europe, Spain "redesigned its political party system" after democracy was re-established following the death of long-time dictator Francisco Franco in 1975 without making room for green parties.

Infractions

At the same time European authorities routinely call out Spain for its environmental shortcomings. According to the European Commission, Spain racked up more infringements of European Union (EU) environmental law between 2015 and 2018 than any other member state - and nearly three times as many as the average for members of the bloc. In July Brussels asked the EU's Court of Justice to take action against Spain over its "systemic violations" of rules limiting nitrogen dioxide emissions, a poisonous gas in car exhaust. —AFP

Kiev slams Apple for calling Crimea part of Russia

KIEV: Ukraine has lashed out at Apple for showing the annexed Crimea peninsula as part of Russia, saying the US tech giant did not "give a damn" about the pain of the Ukrainian people. Russian lawmakers said on Wednesday that Apple had complied with a demand from Moscow for Crimea to appear as Russian territory on its maps and weather apps.

"Let me explain in your terms, @Apple," Ukrainian Foreign Minister Vadym Prystaiko wrote on Twitter in response to the news. "Imagine you're crying out that your design & ideas, years of work & piece of your heart are stolen by your worst enemy but then smb ignorant doesn't give a damn about your pain. That's how it feels when you call #Crimea a (Russian) land," he said. "@Apple, please, please, stick to high-tech and entertainment. Global politics is not your strong side."

The Ukrainian Embassy in the United States tweeted: "We guess Ukrainians (are) not giving any thanks to @Apple this #Thanksgiving!" As of Wednesday, the Black Sea peninsula and its largest cities of Sevastopol and Simferopol were being displayed as Russian territory on Apple's apps when



MOSCOW: An illustration picture taken yesterday shows an Apple map with the Crimea peninsula on a smartphone screen. —AFP

used in Russia. Moscow has put pressure on foreign companies to recognize the peninsula as an integral part of its territory.

'Let's boycott Apple!'

Some Ukrainians responded by calling for a boycott of Apple devices. "Let's take our gadgets onto the square, pile them up and burn them," wrote Igor Kravchuk from Kharkiv on Facebook. Another, Yevgen Petrov from Zhytomyr, said: "Let's boycott Apple and support Android, a creator of gadgets that don't cave in to the Kremlin!" Google does not identify Crimea as belonging to either Russia or Ukraine on its maps. However, when used in Russia, it writes Crimean place-names in Russian and shows a line along the de facto border with Ukraine. —AFP