government officials have said that one aim of the new security law is to stop them.

Because the security law hasn't yet been drafted, it is not clear how it will be implemented or how it might affect researchers' lives.

The heads of the governing councils of Hong Kong's eight publicly funded universities have expressed support for the new bill, and say universities will be able to continue research and learning once it is introduced. In a 1 June statement, they said: "As residents of Hong Kong, we enjoy the protection provided by the state, and in turn have a reciprocal obligation to protect the state by supporting the introduction of legislation which prohibits criminal acts that threaten the existence of the state."

But some academics are concerned that the law could allow the central government to interfere with independent research in the name of national security. "Academics in Hong Kong are very concerned about possible changes," says an administrator at a university in Hong Kong who requested anonymity because they think their university is under pressure to publicly support the security law. They worry that a national security law could be used to restrict the publication of sensitive research, such as studies on the new coronavirus. Scientists on the mainland need government approval to publish research relating to the origins of the pandemic.

A Hong Kong-based editorial-board member for a scientific journal who also requested anonymity because they need permission to speak to the press, says they are worried that foreign research grants or international collaborations – particularly with the United States – could be defined as foreign interference and restricted under the law.

When asked about researchers' concerns, Hong Kong's Education Bureau noted that the laws that safeguard academic freedom and institutions' autonomy will remain. "It is counterproductive and not conducive to the pursuit of academic excellence by Hong Kong's universities to demonize the National Security legislation and to create unfounded and unnecessary fear in the academic circle," the bureau said in an e-mail to *Nature*.

Risk of self-censorship

Some academics think that one of the greatest effects the new law will have on research will be an increase in self-censorship. Researchers are already wary about making comments or publishing research that could upset the central government – work that could distress financial markets, for example, such as negative results from a large vaccine trial, says Shekhar Madhukar Kumta, an assistant dean of education for the medical faculty at the Chinese University of Hong Kong. Under the new law, even more researchers are likely to be worried about this, whether or not they're at risk of breaking the law, he says.

A foreign researcher who studies science and ethics at a university in Hong Kong, who requested anonymity for fear their comments could jeopardize their work visa, says they no longer feel able to criticize the science and technology practices of the central government while living in Hong Kong. They worry that the security law could bring the risk of prison sentences for such criticisms. "Even science can be politicized," they say.

> "Academics in Hong Kong are very concerned about possible changes."

Another researcher, Natalie Wai-man Wong, a visiting environmental researcher at the City University of Hong Kong, says she doesn't think her research on environment management and governance in mainland China, Hong Kong and Taiwan is particularly sensitive. But she has decided that she will do less work focusing on mainland China – and work on existing data sets, rather than generating her own – to avoid the risk of her work being classified as subversive under the security law. "This is what I can do at this moment," she says. Wong doesn't view the changes she's making as bad, but, rather, as an opportunity to meet new collaborators and learn new things.

No need to worry

Other researchers who spoke to *Nature* don't see any evidence that the law will affect research. Matthew Evans, dean of science at the University of Hong Kong, says he's seen no indication that publishing research on politically sensitive topics or participating in international projects and grants will be restricted under the law.

One thing that Evans does think could affect science in Hong Kong is the US government's announcement of its intent to remove the city's special policy status, which includes access to sensitive data. That could affect the ability of scientists in Hong Kong to access US research data from institutions such as NASA, he says.

ASTRONOMERS SPOT FIRST FAST RADIO BURST IN THE MILKY WAY

The burst came from a nearby star – and provides a close-up view of one of astronomy's biggest puzzles.

By Alexandra Witze

For a fraction of a second in late April, a hyper-magnetized star in the Milky Way blasted out radio energy. Now scientists say that this sudden, strange blip could help to explain one of astronomy's biggest puzzles: what powers the hundreds of other mysterious fast radio bursts (FRBs) that have been spotted much farther away in the Universe.

The event is the first fast radio burst – brief, powerful cosmic flashes that flare for milliseconds – to be detected in the Milky Way.

The star it came from, called SGR 1935+2154, is a magnetar – a dense, spinning ember left behind after a supernova, wrapped in intense magnetic fields. Many astronomers think that fast radio bursts come from magnetars, but haven't been able to show the link.

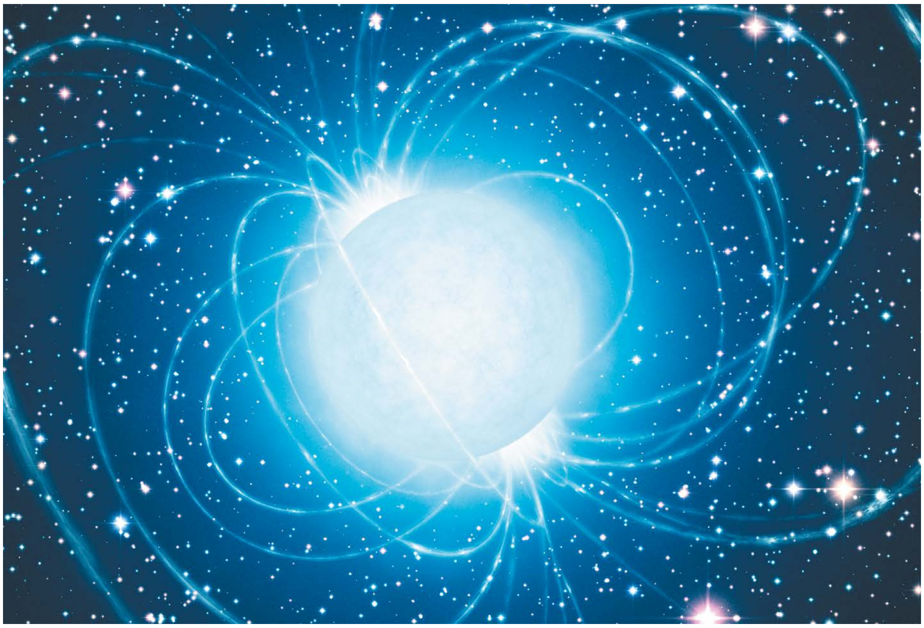
"I wouldn't say it's the nail in the coffin that we've figured out that fast radio bursts come from magnetars," says Emily Petroff, an astronomer at the University of Amsterdam in the Netherlands. "But it's by far the most promising piece of evidence that we've found."

Preliminary papers describing the burst have flooded the arXiv preprint server.

Until now, the closest known fast radio burst happened around 150 parsecs (490 million light years) from Earth. This magnetar is in our Galaxy just 10,000 parsecs away, making it close enough for astronomers to have a great view as it sizzles with activity. "Here is something that gets close to the insane intensity of cosmic FRBs, but that is happening not so far away," says Sarah Burke Spolaor, an astronomer at West Virginia University in Morgantown. "It's a fantastic opportunity to learn about at least one of the sources that could be causing FRBs."

Cake-tin telescope

The show began on 27 April, when satellites including NASA's Neil Gehrels Swift Observatory spotted γ-rays streaming from SGR 1935+2154. The star is one of about 30 known magnetars in the Milky Way; these occasionally go through spurts of activity during which they emit



ESO/L. CALÇADA

An artist's impression of a magnetar.

radiation at different wavelengths. The next day, the Canadian Hydrogen Intensity Mapping Experiment (CHIME) radio telescope in Penticton, Canada, detected a huge radio flash occurring to the side of its field of view – from the place where the magnetar lay (The CHIME/FRB Collaboration. Preprint at arXiv https://arxiv.org/abs/2005.10324;2020).

The CHIME team had been hoping to pick up radio emission from SGR 1935+2154. But they were expecting faint radio pulses. Instead, "we got something much more exciting", says Paul Scholz, an astronomer at the University of Toronto who led the analysis.

A second research team got even luckier by catching the intense burst full-on. The STARE2 radio telescope is made of low-tech antennas – each consists of a metal pipe with two cake tins attached – at two locations in California and one in Utah. STARE2 has been observing the sky since last year, hoping to catch something resembling a fast radio burst in the Milky Way. On 28 April, it did exactly that, detecting the same radio pulse that CHIME saw (C. D. Bochenek *et al.* Preprint at arXiv https://arxiv.org/abs/2005.10828; 2020).

"I was so excited that it took me a little bit of time to open up the data and inspect it, to make sure it was real," says Chris Bochenek, a graduate student at the California Institute of Technology in Pasadena who works on STARE2.

Energy outburst

The radio flash is by far the brightest ever seen from a magnetar in the Milky Way, and could offer clues to what causes fast radio bursts seen elsewhere in the Universe.

Because magnetars are spinning quickly and have powerful magnetic fields, they have huge reservoirs of energy that can produce outbursts. One idea about the source of these outbursts is that something happening inside the magnetar – such as a 'starquake', analogous to an earthquake – could crack its surface and release energy. Another possibility is that the highly magnetized environment around the magnetar somehow produces the burst.

Astronomers might be able to narrow down these possibilities by studying both the radio burst from SGR 1935+2154 and bursts in other wavelengths of light that happened simultaneously, says Laura Spitler, an astronomer at the Max Planck Institute for Radioastronomy in Bonn, Germany. Several satellites detected X-ray bursts from the magnetar at around the same time as the radio emission. It is the first time astronomers have seen these signals in other wavelengths; seeing them was possible only because the magnetar is so close to Earth.

But some mysteries remain. For one thing, the 28 April burst was about 1,000 times less energetic than are fast radio bursts seen in distant galaxies. And some distant bursts repeat at intervals, which can't be easily explained by the bursts coming from a magnetar.

Astronomers still want to collect as many examples of fast radio bursts as they can. "Each serves as a kind of backlight shining through all the material between us and the source," says Jason Hessels, an astronomer at the University of Amsterdam. Scientists have recently started to use that information to map the distribution of matter in the Universe.

"There's an exciting future to the field," says Hessels, "even if this is more or less the answer to where the bursts are coming from."

INFLUENTIAL PANDEMIC SIMULATION VERIFIED BY CODE CHECKERS

Model shown to be reproducible after software engineers called the underlying code 'a buggy mess'.

By Dalmeet Singh Chawla

"Totally unreliable." "A buggy mess." Over the past month, software engineers have sharply criticized the code underpinning an influential coronavirus simulation by scientists at Imperial College London, one of several models that helped to sway UK politicians into declaring a lockdown. Some media articles even suggested that the simulation couldn't be repeated by others – casting further doubt on the study. Now, a computational neuroscientist has reported that he has independently rerun the simulation and reproduced its results.

The successful code testing isn't a review of the scientific accuracy of the simulation, produced by a team led by mathematical epidemiologist Neil Ferguson. But it dispels some misapprehensions about the code, and shows that others can repeat the original findings.

The new test is "the best possible verification of Ferguson's simulations given the state of the art in computational science", says Konrad Hinsen, a computational biophysicist at the French national research agency CNRS in Paris, who was not involved in the work. In May, he wrote in a blogpost that the study's code looked "horrible", but that such shortcomings are expected in code written by scientists who aren't specialists in software development.

Released in mid-March, the original study reported that there could be half a million UK deaths if nothing were done to stop the virus, and modelled how policy interventions might help (N. Ferguson *et al.* 'Report 9' http://doi.org/ggqtdx; 2020). But Imperial scientists did not make the code available for public scrutiny. When a cleaned-up version was released