

Research highlights

A SHOW OF FORCE? CRYSTAL TEST OF QUANTUM GRAVITY

A defining principle of quantum mechanics is that certain measurements cannot be made without changing the state of the object being measured. Scientists have now proposed an experiment to test whether a measurement of gravity – the one force of nature that has resisted a fully quantum-theoretical treatment – obeys this rule.

In the scheme devised by Farhan Hanif at University College London and his collaborators, a nanometre-scale crystal would be put temporarily into ‘quantum superposition’ – meaning that it is in two places at once. In some experimental runs, a second nanocrystal would be brought close enough to the first to create a feeble gravitational attraction between the two.

The first crystal would feel the gravity of the second, which would effectively ‘measure’ the mass of the first. Researchers would determine whether this measurement creates a difference between the first crystal’s final state and the final state of a similar crystal that has not been perturbed by another. Such a difference would be a first proof that gravity does indeed have a quantum nature.

No one has yet managed to get a nanocrystal to exist in two places at once, but the authors say that new techniques could make the experiment feasible.

Phys. Rev. Lett. **133**, 180201 (2024)



ALGORITHMS DON'T LEAD PEOPLE ASTRAY, WE GO OUR OWN WAY

Search-engine algorithms are not the main force steering people towards misinformation – Internet users’ own clicks are, according to an analysis of 14 billion search-result pages from the search engine Bing and some 8,000 web pages visited by Bing users.

Personalized algorithms, which shape what users see when they browse the Internet, are often thought to expose people to unreliable information.

To test this, Kevin Greene at Princeton University in New Jersey and his colleagues analysed users’ Bing searches during three months in 2022 and three months in 2023. The researchers marked content in the search-results pages and the websites that users visited as reliable or unreliable, basing their labels on ratings by two independent sources.

They found that unreliable web pages appeared in 1.4% and 0.9% of searches in 2022 and 2023, respectively, and rarely appeared in the top results; reliable sites appeared 19 to 45 times more often. More than 82% of interactions with unreliable web pages resulted from users specifically searching for these sites, suggesting that people’s own actions are a stronger factor in accessing unreliable online content than are search algorithms.

Sci. Adv. **10**, eadn3750 (2024)

CHINA'S FORESTS ARE STOCKPILING VAST AMOUNTS OF CARBON

Forest-conservation efforts in China are paying off – by drawing carbon out of the atmosphere and reducing the effects of climate change.

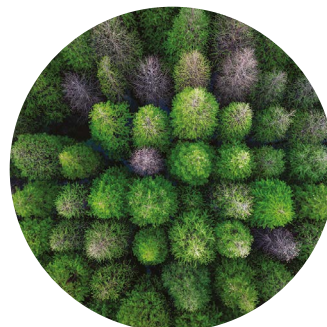
Chinese officials say the country has planted and conserved forests that serve as a carbon sink by locking up carbon in their wood. But the assertion must be verified independently.

Zhanmang Liao at the University of Electronic Science and Technology of China in Chengdu and colleagues analysed satellite observations of forests across China and found that, between 2001 and 2020, forest cover increased by 6.2%. The authors also used the observations to estimate that, on average, forests and woodlands soaked up almost 209 million tonnes of carbon each year. That’s roughly what Chinese authorities had estimated.

More than half of those carbon savings were the result of forest-conservation efforts. These included big ecological-restoration projects, such as the Grain for Green programme, which began converting farmland to forests in 1999.

Managing forests directly can have a big impact on carbon sinks, the authors say.

Nature Geosci. **17**, 1127–1134 (2024)



MY, WHAT GOOD EARS YOU HAVE! AGED BATS STILL HEAR CLEARLY

Say what? One species of bat shows a remarkable resistance to age-related hearing loss, offering scientists a tantalizing chance to look for clues to how some animals preserve hearing function over a long lifetime.

Many bat species rely on echolocation to find their way around. This requires them to detect even the quietest echoes from their outgoing calls, meaning they need to maintain their hearing to survive.

To learn whether bats’ hearing degrades with time, Grace Capshaw at Johns Hopkins University in Baltimore, Maryland, and her colleagues estimated the ages of wild-caught big brown bats (*Eptesicus fuscus*, pictured) and measured their hearing sensitivity.

Even bats aged nearly 13 years old – well into old age – retained youthful hearing. Analysis of a portion of the inner ear and the underlying cellular machinery that is central to hearing found no significant evidence of age-related degradation.

The persistence of good hearing in bats could result from protective mechanisms that preserve this cellular machinery. Understanding such mechanisms might aid the development of treatments to slow age-related hearing loss in humans.

Proc. R. Soc. B **291**, 20241560 (2024)