

# **Best of Last Week—Barkhausen noise detected, LLMs use simple mechanisms, link between exercise and insomnia**

April 1 2024, by Bob Yirka

---

Credit: AI-generated image

It was a good week for physics research, as a combined team from Columbia, Nanjing University, Princeton and the University of Munster found the first experimental evidence for a [graviton-like particle](#) in a quantum material—they reported collective excitations with spin chiral graviton modes in a semiconducting material. Also, a team of physicists at California Institute of Technology detected [Barkhausen noise](#) for the first time. The magnetic avalanche was triggered by quantum effects. And a team of researchers at the University of Waterloo's Institute for Quantum Computing announced that the world is one step closer to [secure quantum communication](#) on a global scale. They made the claim after finding a way to produce nearly perfect entangled photon pairs from quantum dot sources.

In technology news, a team with members from MIT, Northeastern University and Technion IIT found that LLMs use a [surprisingly simple mechanism](#) to retrieve some stored knowledge, such as linear functions with as few as two variables and no exponents. And a team at University College London developed a fabrication process that allows for ["near perfect" control](#) of single atoms, a major advance toward quantum computing. Also, an international team of researchers successfully [transformed CO<sub>2</sub> into methanol](#) by shining sunlight onto single atoms of copper deposited on a light-activated material, a discovery that could pave the way for creating new types of green fuels. And a team of engineers at Daegu Gyeongbuk Institute of Science and Technology and Samsung developed a way to [increase the efficiency](#) of eco-friendly solar cells by converting wind energy into high-voltage electricity.

In other news, a combined effort from researchers at the Natural History Museum of Los Angeles County and pharmaceutical giant AstraZeneca

resulted in the discovery of the first-ever [mineral-based treatment](#) for widespread disease using the structure of crystals. They used the crystals to successfully treat patients with hyperkalemia. Also, a team at Trinity College Dublin unlocked genetic secrets from [4,000-year-old teeth](#), which illuminated the impact of changing human diets over the centuries. And finally, an international team of medical researchers found evidence of [a link](#) between consistently exercising two to three times a week over the long term and reduced insomnia risk.

© 2024 Science X Network

Citation: Best of Last Week—Barkhausen noise detected, LLMs use simple mechanisms, link between exercise and insomnia (2024, April 1) retrieved 20 May 2024 from <https://sciencex.com/news/2024-04-week-barkhausen-noise-llms-simple.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--