

Best of Last Week—Superconducting claim, electric grid proposal for Africa, reason for cognitive decline in aging

July 31 2023, by Bob Yirka

Selected African countries and proposed central grid layout. Credit: *Scientific Reports* (2023). DOI: 10.1038/s41598-023-38642-4

It was a good week for physics, as a team of physicists affiliated with several institutions in South Korea claims to have created [a room-](#)

[temperature/ambient-pressure superconducting material](#), although their work has yet to be peer-reviewed. Also, another team of physicists, this one at Leipzig University, achieved [a breakthrough in Monte Carlo computer simulations](#) that should allow for investigating systems with long-range interactions that have previously puzzled experts. And a team at the California Institute of Technology created a [a "law-breaking" device that should allow for better solar energy harvesting](#)—it appears to violate Kirchhoff's law, the first experimental proof that it could be broken.

In technology news, a team of economists and engineers from China, Turkey and Nigeria proposed [the building of a sub-Saharan African electrical grid across 12 countries](#)—they identified factors that would be involved and estimated costs. And a combined team from the University of Colorado and the University of British Columbia in the U.S. designed [a pressure-driven distillation process for a fast and selective water purification method](#) that involves applying pressure to drive vapor transport through membranes. Also, a team from the University of California, working with BASF 3D Printing Solutions B.V., designed and built [a 3D printed robotic gripper that does not need electronics to function](#). And a team with members from several institutions in China, developed [an approach to enhancing relaxors for energy storage devices](#), which they hope will lead to the production of more highly efficient appliances.

In other news, a team at drug maker Krystal Biotech reformulated an experimental gene therapy gel into one that could be used [to restore vision in damaged eyes](#). The resulting gel was then used to cure blindness in a 14-year-old patient with dystrophic epidermolysis bullosa. Also, a team at the University of Copenhagen developed a proof showing that [Earth's plate tectonics recently underwent a fundamental change](#)—subducting plates began to sink lower into the mantle. And finally, a team of medical scientists at the University of Colorado Anschutz

Medical Campus may have discovered [the mechanism behind cognitive decline in aging](#), which is a misregulation of a brain protein known as CaMKII.

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