

Best of Last Week—Gravity existing without mass, a chip based 3D printer and the driver of IBS discovered

June 10 2024, by Bob Yirka

The chip-based 3D printer concept. Credit: *Light Science and Applications* (2024). <https://doi.org/10.1038/s41377-024-01478-2>

It was an interesting week for physics research as Richard Lieu, a professor at the University of Alabama, proposed that [gravity can exist](#)

[without mass](#), mitigating the need for dark matter in hypothetical theories that have been developed to explain certain gravitational effects. And Naman Kumar, a researcher at the Indian Institute of Technology, developed a new model suggesting that [a partner anti-universe could explain accelerated expansion without the need for dark energy](#)—a finding that could upend theories developed to explain the accelerated expansion of the universe.

Also, a team at Columbia University, working with a colleague from Radboud University, discovered [a new state of matter](#) when they took molecules to a new ultracold limit. And a team at the Weizmann Institute of Science's Physics of Complex Systems Department found that [photon collisions can result in the creation of vortices](#)—a find that could have a major impact on quantum computing.

In technology news, a combined team of engineers from the University of Texas and MIT demonstrated [the first chip-based 3D printer](#) small enough to fit in the palm of the hand. And another combined team, this one made up of engineers from Texas A&M University and Ho Technical University, found that new ransomware attacks based on an evolutionary generative adversarial network [are able to evade security measures](#).

Also, a team of roboticists at ETH Zurich's Robotic Systems Lab demonstrated [an autonomously navigating wheeled-legged robot](#), giving it more abilities than traditional robots. And a collaboration between researchers from Mexico's National Institute of Astrophysics, Optics and Electronics (INAOE) Institute in Puebla resulted in the development of [an AI system that laid the groundwork for decoding dog vocalizations](#).

In other news, a team of public health researchers affiliated with multiple institutions in China [found microplastics in every sample of human semen they tested](#). Also, a massive rare fish thought to live only

in temperate waters in the southern hemisphere [washed up on shore along Oregon's northern coast](#). And finally, a team of medical researchers at the Francis Crick Institute, working with UCL and Imperial College London, discovered [a new biological pathway that is a principal driver of inflammatory bowel disease](#) and related conditions.

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