Best of Last Week—Black holes as sources of dark energy, where stolen bikes go, what time of day to exercise

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It was a good week for physics as an international team of astrophysicists found evidence that black holes serve as a source of dark energy—their measurements of supermassive black holes aligned with predictions made by Einstein's theory of gravity. Also, a team at California Institute

of Technology studying papers left behind by Leonardo da Vinci, found that he had explored the idea of gravity as a form of acceleration—hundreds of years before others such as Galileo Galilei and Isaac Newton made similar observations leading to a law of universal gravitation. And a combined team from Princeton University, Purdue University and Monmouth College announced that they had observed a bubble phase of composite fermions.

In technology news, a team of physicists with members from Northwestern University, the University of Washington, the University of Toronto and Swiss Federal Laboratories for Materials Science and Technology solved a durability issue with next-generation solar cells. By creating a highly efficient halide perovskite that could be made at a lower cost than silicon, they believe they have jumped a major hurdle in commercializing solar power. Also a team at MIT working with colleagues at the Amsterdam Institute for Advanced Metropolitan Solutions, determined where stolen bikes go when they disappear from public parking spots. And Michal Kosinski, a computational psychologist at Stanford University found that the chatbot ChatGPT was able to pass the Theory of Mind Test at a nine-year-old human level.

In other news, a team of neuroscientists at the University of Virginia found that blocking the activity of aryl hydrocarbon receptors in T cells in the gut could dramatically reduce the amount of bile and other metabolites produced in mice, resulting in a major decrease in inflammation associated with multiple sclerosis. Also, a pair of Earth scientists at Northern Arizona University wondered if the Earth was in a cooling or warming phase just prior to the onset of global warming—the were not able to find a definitive answer, but did find evidence of cooling that ended in the 1800s. And finally, a combined team of researchers from the University of Copenhagen and Karolinska Institutet found evidence suggesting that the time of day that a person exercises may impact the amount of fat burned.