

Saturday Citations: Ancient anarchists, filthy tycoons and a new state of matter

August 19 2023, by Chris Packham



Artist's view of the New Horizons spacecraft against the Milky Way. Credit: Serge Brunier/Marc Postman/Dan Durda

This week on Phys.org, we published news about ancient anarchists, a hidden phase transition, dark matter developments, hot oceans and pollution taxes.

Archaeology validating anarchy

This one's for all the homeys who reject justifications for social authority and seek to abolish institutions of coercion and hierarchy: Archaeologists from University College London unearthed a [huge network of ceramic water pipes and drainage ditches](#) at the Chinese walled site of Pingliantai dating to the Longshan period 4,000 years ago.

Notably, this complex network was engineered without the direction of any centralized state authority. "The discovery of this ceramic water pipe network is remarkable because the people of Pingliantai were able to build and maintain this advanced water management system with stone-age tools and without the organization of a central power structure. This system would have required a significant level of community-wide planning and coordination, and it was all done communally," said Dr. Yijie Zhuang of UCL.

The site itself shows little evidence of a social hierarchy or stratification. The houses are "uniformly small," and a cemetery exhibits no evidence of hierarchy in funerary rites, in contrast to other excavations dated to the same period. According to the article, the Pingliantai site demonstrates that egalitarian and communal societies were capable of mass engineering accomplishments.

New phase transition just dropped

Researchers at Lawrence Berkeley National Laboratory have detected molecular behavior representing a [hidden phase of matter](#) that is neither liquid nor solid, but a secret third thing.

Specifically, the Berkeley Lab researchers explain why supercooled liquids remain disordered like a liquid until making a sudden transition

to a solid-like state at a specific point called the onset temperature. The materials become so viscous that they barely move, a state representing a previously unknown phase transition.

The scientists say this state separates supercooled liquids from normal liquids. The finding also sheds light on the mystery of amorphous materials like glass or plastic, which are essentially slow-flowing liquids, but which are rigid at the [molecular level](#); it could eventually lead to amorphous materials with medical and industrial applications.

Universe mostly dark

The New Horizons spacecraft was launched in 2006 and propelled across the [solar system](#) at 10.10 miles per second, somehow [not the fastest speed](#) of any spacecraft. Its mission was a flyby of ruggedly handsome, alleged non-planet Pluto, completed in 2015, and in accordance with the law of conservation of momentum, it just kept going.

New Horizons is now really, really far away—so distant that it can [make accurate measurements](#) of the actual darkness of the universe.

Since it's the only deep space probe that can still transmit camera data from the outer solar system, the New Horizons mission team pointed its cameras at a patch of sky beyond the Milky Way, away from the sun and any bright stars. They compared the amount of captured light to that captured by Hubble's view of dark sky and found, as expected, that it was much darker— though still far brighter than the darkest imaginable object (a C-3PO doll covered in [Vantablack](#)).

Ocean hot

If you thought coral reef bleaching was only for Australia, hold on to

your dashing, open-crown [Aussie slouch hat](#).

The Associated Press reports that the coral reef off southeast Florida is experiencing [extreme and unprecedented bleaching](#) due to rising ocean temperatures. Ocean temperatures have risen to above 32 degrees Celsius this summer—that's 90 degrees Fahrenheit in American—and experts say the best way to cool the waters at this point would be a hurricane or a tropical storm—exclamation point!

Tax the filthy

In yet another blow to beleaguered plutocrats, University of Massachusetts Amherst researchers used 30 years of data following the flow of carbon and income over 2.8 billion inter-sectoral financial transfers to calculate supplier-based and producer-based greenhouse gas emissions in the U.S.

And guess what? [The top 10% of wealth holders create 40% of U.S. carbon emissions](#), which amounts to a pretty good argument that the tax code could be a good multi-tool for a net zero framework. How? The authors suggest taxes focused not on consumption but rather on the climate intensity of investment incomes. Have a great weekend, oligarchs!

© 2023 Science X Network

Citation: Saturday Citations: Ancient anarchists, filthy tycoons and a new state of matter (2023, August 19) retrieved 29 April 2024 from <https://phys.org/news/2023-08-saturday-citations-ancient-anarchists-filthy.html>

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.