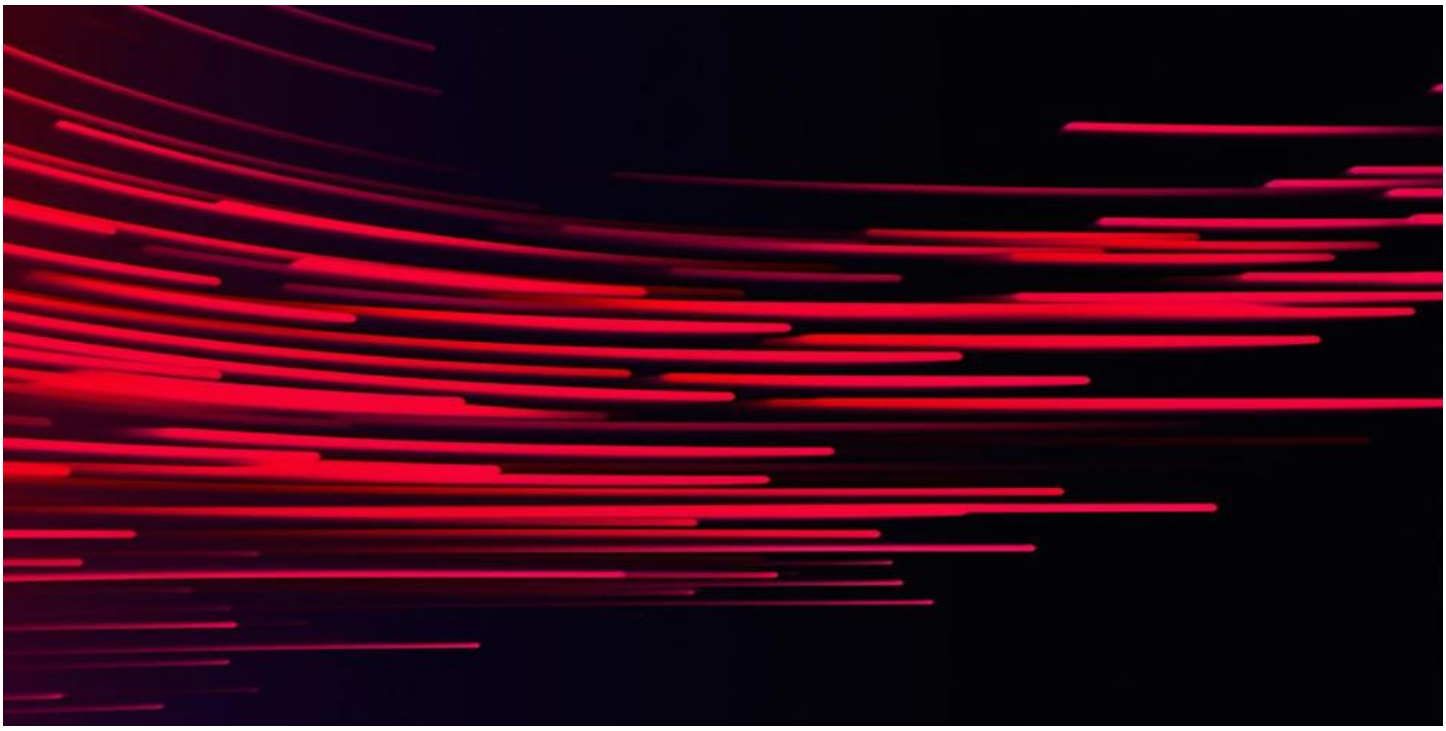
Scientists just discovered there’s actually something faster than the speed of light

Story by Darren Orf



Scientists experimentally confirmed what we’ve known to be true for half a century—darkness can “travel” faster than light.

Here’s what you’ll learn when you read this story:

Although people often say nothing travels faster than the speed of light, this cosmic speed limit only pertains to particles with information or mass.

Darkness—the simple absence of photons—contains neither, and a new experiment confirms the 50-year-old hypothesis that dark can exceed 299,792,458 meters per second.

Researchers confirmed this fact of physics by analyzing “dark points” within a single wavelength of a polariton, which travels roughly 100 times slower than light in a vacuum.

It’s an oft-touted fact that nothing can travel faster than the speed of light, but that’s technically not true. As Albert Einstein originally stated in 1905, information can’t travel faster than the speed of light, but something that’s both massless and devoid of information could technically blow past this cosmic speed limit—something such as “darkness” itself.

Of course, an international team of scientists (led by researchers at Technion–Israel Institute of Technology in Haifa, Israel) wouldn’t just go out and measure “darkness”—or the absence of photons—directly. Instead, they relied on “dark points” within light waves. You can think of these points as tiny holes in a wave structure where amplitude drops to zero, which is often why they’re referred to as “zero points” or “null points” within light waves. They’re points of complete darkness embedded within a light field.

These create what are known as vortices, and the authors describe this phenomenon as similar to the vortex in a river overtaking the flow of water itself, in such a way that their speed is technically superluminal (a.k.a. faster than light). The results of the study were published in the journal Nature.

“Theory has long predicted that optical singularities can exhibit superluminal motion, particularly at moments close to their creation or annihilation, where their velocities can become unbounded,” the authors wrote. “We monitor the ultrafast dynamics of optical phase singularities with deep sub-wavelength spatial and deep sub-cycle temporal resolutions, revealing their acceleration near annihilation events.”

Proving that darkness can outpace light wasn’t easy, and it required a unique microscopy system. Using this advanced laser setup, coupled with a specialized opto-mechanical system, researchers gathered data at highly accurate spatial and temporal resolution. Additionally, the experiment relied on a thin hexagonal boron nitride (hBN) flake—a material in which light transforms into “light-sound waves” known as polaritons. This quasiparticle is essentially a light-matter hybrid that crucially slows down the speed of light by roughly 100 times compared to light traveling in a vacuum (still much faster than the speed of sound).

It’s in this state that “dark point” vortices can be seen surpassing the speed of light.

“Our discovery reveals universal laws of nature shared by all types of waves, from sound waves and fluid flows to complex systems such as superconductors,” Ido Kaminer, senior author of the study from Technion, said in a press statement. “We believe these innovative microscopy techniques will enable the study of hidden processes in physics, chemistry, and biology, revealing for the first time how nature behaves in its fastest and most elusive moments.”

Corey Cowan

7 hours ago

Darkness is the anti-photon. Dark Matter is the Cosmic ECM, a single crease that extends everywhere. Adjacency is instantaneously experienced which explains entanglement. Every photon is paired to an antiphoton we can't see. We call it Dark Energy.

Lez Winner

16 hours ago

This is the most important part. Tools that can barely measure the spead of sound. Let alone light. Dont read. "Using this advanced laser setup, coupled with a specialized opto-mechanical system, researchers gathered data at highly accurate spatial and temporal resolution. Additionally, the experiment relied on a thin hexagonal boron nitride (hBN) flake—a material in which light transforms into “light-sound waves” known as polaritons. This quasiparticle is essentially a light-matter hybrid that crucially slows down the speed of light by roughly 100 times compared to light traveling in a vacuum (still much faster than the speed of sound)."

Tony Quintanilla

20 hours ago

Gemini fact check: "The Bottom Line: They aren't measuring a particle "breaking" the speed limit. They are measuring the speed of a shadow cast by a complex wave interference pattern. It’s brilliant engineering of a measurement system, but Einstein’s ghost is still resting easy—no information or energy is actually beating light in a race."

Scott Smith

10 hours ago

Nothing physical travels faster than light. Darkness isn’t a thing at all; it’s simply the absence of photons, so it doesn’t count as “something” moving. When scientists say darkness can appear to move faster than light, they’re talking about a shifting pattern, not an object or information outrunning light.