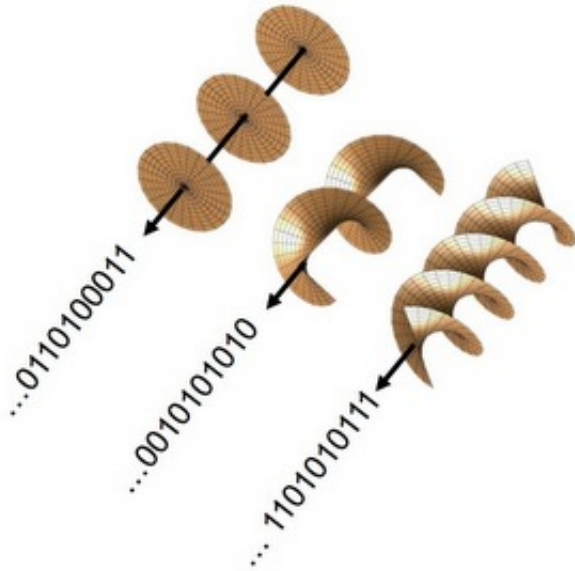


# Research boosts optical fiber data speeds

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"Twisted data" - Multiple data streams are transmitted and received as different twists of light. Credit: City College of New York

In the latest advance to boost the speed of the Internet, a research team including, the City College of New York, University of Southern California, University of Glasgow, and Corning Incorporated, has demonstrated a way to increase the data speeds of optical fibers - considered the Internet's backbone.

"Optical fibers can be sped up by 'twisting' data; multiple data streams are transmitted and received as different twists of light," says Giovanni Milione, a City College doctoral student at the time. "Thought

impossible using standard optical fibers which untwist the data, corrupting it, we showed that if the data was digitally re-twisted, after it was received, it could be recovered."

To digitally re-twist the data, the researchers borrowed a well-known technique of radio communication, referred to as 'MIMO,' used by cell phones and Wi-Fi routers every day. "Light's twists were treated like antennas," Milione explains. "Even if transmitted data was untwisted, it was received as a different twist (antenna) and recovered."

As a proof of principal, the researchers successfully transmitted four data streams on four twists of light over 5 kilometers of standard optical fiber. A key to their experiment was a University of Glasgow-made device that separates and combines light's twists as a prism does color.

"This development could offer a solution to the insatiable needs of data-driven social media, such as, Facebook and YouTube, which continually push [optical fiber](#) data speed limits," said Distinguished Professor of Physics Robert R. Alfano.

Provided by City College of New York

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