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## Single Laser Optical Approach Transmits 700 DVDs of Data per Second

By doing away with an analog conversion, researchers have transmitted 26 terabits of data per second over a 50-kilometer distance with a single laser. Christopher Intagliata reports

May 23, 2011 | 2

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Whether it's for streaming Netflix or sharing files, we're gobbling up more and more data—and we want it faster. But even shooting data with lasers over fiber-optic cables has its limits. Because when you encode digital bits—ones and zeros—into an analog, optical signal, you're still limited by the bit-rate of your electronics. The standing record is about 100 gigabits per second.

To get around that bottleneck, researchers skipped the electronic signal processing—and found a way to do it purely optically instead. Using that method, they were able to send data over a 50-kilometer length of optical fiber at 26 terabits per second. That's like sending 700 DVDs a second—the fastest ever recorded for a single laser. The research appears in the journal *Nature Photonics*. [David Hillerkuss, "[26 Tbit s<sup>-1</sup> Line-Rate Super-Channel Transmission Utilizing All-Optical Fast Fourier Transform Processing](#)"]

It is possible to transfer equivalent amounts of data with conventional technology, by bundling together hundreds of lasers—but doing it with a single laser is far more energy efficient. Of course, there's no telling when these transfer rates will make it to your living room. And whether they'll be fast enough for our future need-for-speed.

—Christopher Intagliata

[The above text is an exact transcript of this podcast.]

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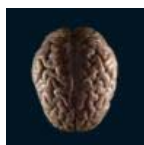
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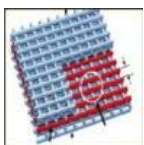
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A better explanation of the digital transmission encoding method would have been very helpful (essential to understanding what's being discussed). Is the transmission being digitally modulated, or what? Any hints???

Thanks for the reference, but I can't afford to access "Nature". Perhaps others can, through their libraries, schools or employers...

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