Waves and light can help transfer data at 100Gb / s

Terahertz rays can move data 1,000 times more than a normal 100 megabit network.

Researchers have made breakthroughs in controlling terahertz quantum laser, which can move large amounts of data at 100 gigabits per second - 1,000 times the size of a regular 100 megabit network.

So what kind of laser is special compared to other types of laser? It can transmit light within the terahertz range of the electromagnetic range, which has been applied in spectroscopy, to support chemical analysis.

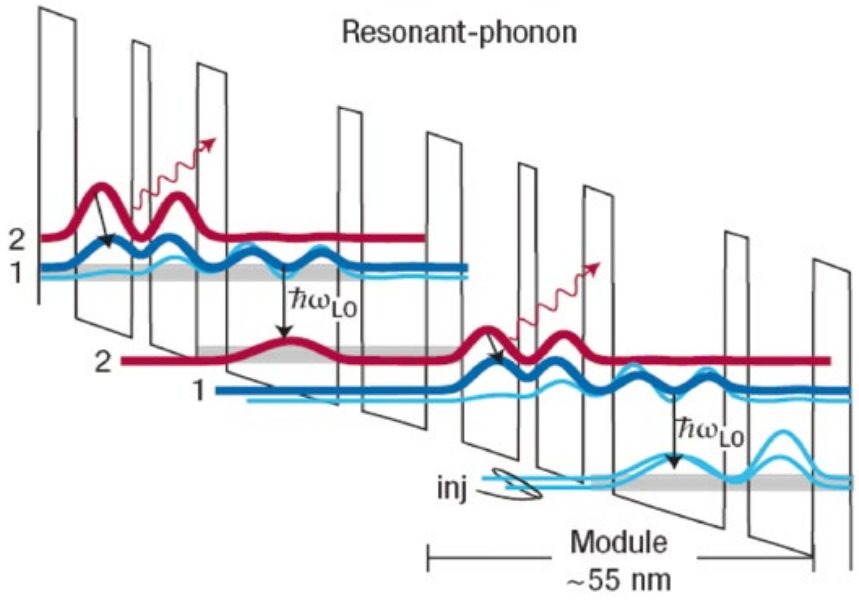
The laser can also provide super fast jump-to-wire wireless links for high data traffic situations such as hospitals or university research areas, and it is also used in industrial applications. Technology using satellite communications. To be able to send data at such a high speed, lasers need to be transmitted at a very fast pace - by repeatedly switching on and off about 100 billion times per second.

A team of researchers at Leeds and Nottingham universities believe they can be transmitted in such a rhythm using sound and light waves, and announced their results on February 11 in Nature Communications.

" *This is a very interesting study,* " says John Cunningham, a professor of nanoscale electronics . *At the moment, the system responsible for creating quantum stratum laser pulses is using electricity - but it There are many disadvantages.*

"The electronics for managing its beats are often ineffective, hampering the transfer process. Instead, the new method we are developing will rely solely on sound waves. bar ".

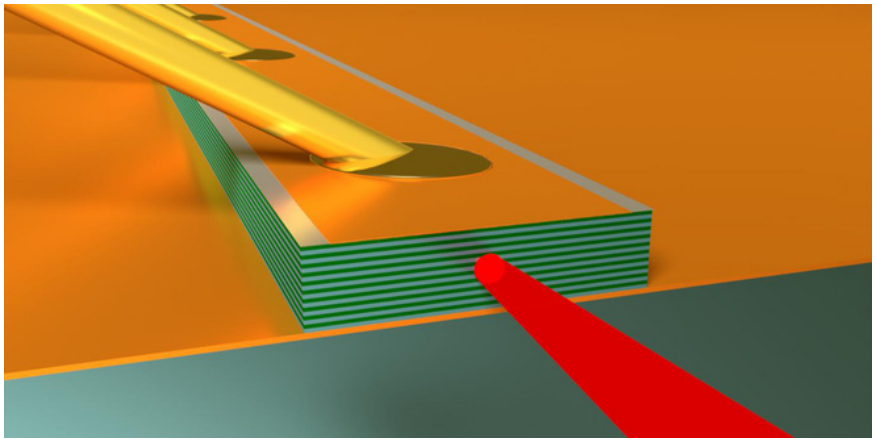
This type of beam has very high efficiency. When an electron passes through a lens for that ray, it passes through quantum wells - where the electron's energy level decreases, simultaneously emitting a pulse of light.



An electron is capable of emitting many photons, and the scientists control the process itself to achieve the desired results. Instead of using external electronics, the team at the universities of Leeds and Nottingham use sound waves to vibrate quantum wells inside these lasers.

Sound waves are created by the vibration of another laser beat onto an aluminum film. As a result, the film expands and shrinks, producing mechanical waves throughout the quantum cascade laser.

Tony Kent, a physics professor at Nottingham, said: " *What we do is use sound waves to shake the electromagnetic states inside the quantum cascade laser. We see that the terahertz light at the output have been changed by this layer* ".



He added: " *We have not reached the point where we can stop and start the flow completely, but we can change the output of light by a few percent. I believe that just With some refinements, we could develop a mechanism for*

complete control of the emission of photons from the laser, and we could integrate the broadcast structure with the terahertz laser so that we don't need to depend on a sound source. bar outside ".

" *This will open us up to a new field of physics and engineering sciences promoting and exploring the ability to interact with terahertz sound and light waves to assist people in many different fields.* " .

According to ScienceDaily

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