

ELECTRONICS

Tiny Quantum Chip Developed By Researchers

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Researchers at Nanyang Technological University (NTU) in Singapore have developed a quantum communication chip that is 1,000 times smaller than current quantum setups.

The tiny chip, roughly 3mm in size, uses quantum communication algorithms to provide enhanced security compared to existing standards. It does this by integrating passwords within the information that is being delivered, forming a secure 'quantum key'. After the information is received, it is destroyed along with the key, making it an extremely secure form of communication.

It also needs 1,000 times less space than current quantum communication setups that can be as big as a refrigerator or even take up the space of an entire room or office floor. This opens doors for more secure communication technologies that can be deployed in compact devices such as smartphones, tablets and smart watches. It also lays the foundation for better encryption methods for online transactions and electronic communication.

The research was led by NTU Professor Liu Ai Qun, and Associate Professor Kwek Leong Chuan, with the findings published in Nature Photonics, a peer-reviewed journal.

"In today's world, cyber security is very important as so much of our data are stored and communicated digitally. Almost all digital platforms and repositories require users to input their passwords and biometric data, and as long as this is the case, it could be eavesdropped on or deciphered," explained Prof Liu.

"Quantum technology eliminates this as both the password and information are integrated within the message being sent, forming a 'quantum key'."

The chip offers the same level of security provided by quantum technology, and the researchers suggest it will be cost effective and easy to manufacture as it uses standard industry materials, such as silicon.



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