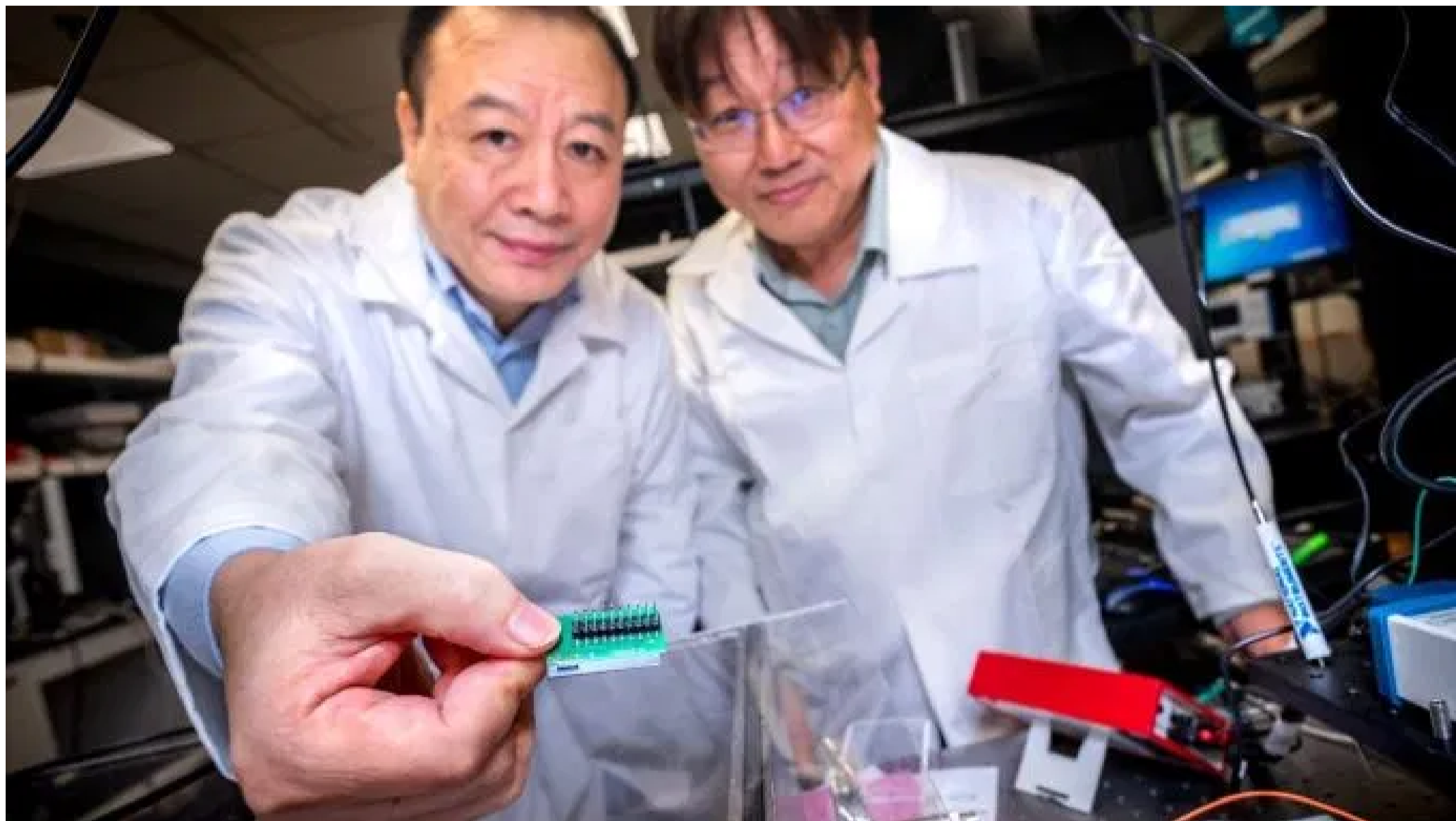


# 1000 times smaller quantum chip than current configurations created by Singapore researchers



Liu Ai Qun and Kwek Leong Chuan show their new quantum stone (credit: NTU Singapore)

A chip that uses quantum communication algorithms "a thousand times smaller than the current configurations" was created by a group of researchers from Nanyang Technology University in Singapore (NTU Singapore).

According to the press release presenting the study, published in *Nature Photonics*, this new chip could prove to be useful above all as regards the security context in the various communication methods, from the withdrawal of cash from the ATM to the purchase of goods online. These are technologies that today are not very safe and whose communications can be intercepted.

Only 3-4 mm wide, the chip uses quantum communication algorithms and provides a higher level of security than existing standards thanks to quantum key distribution (quantum key distribution, QKD).

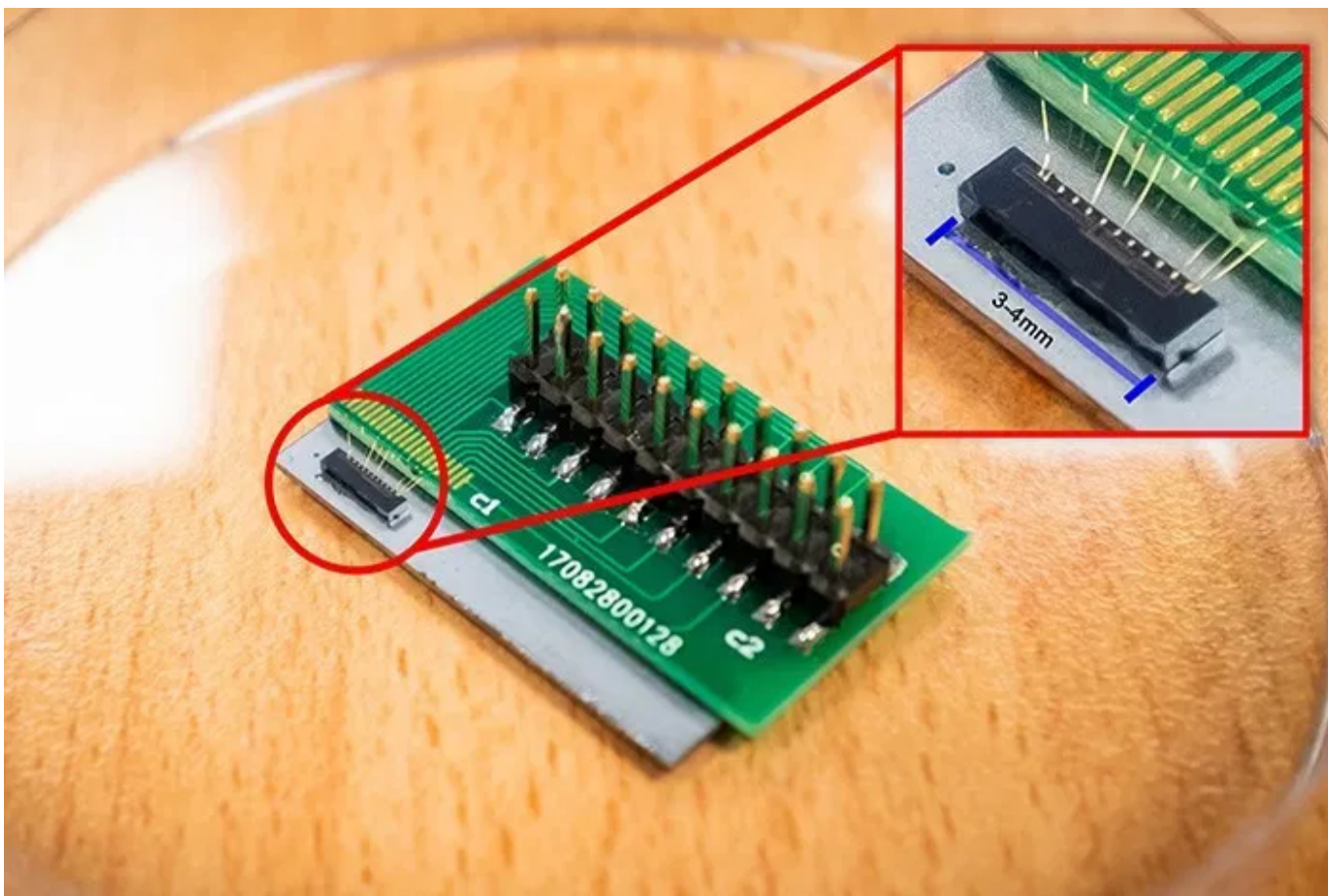
The chip integrates passwords into the information provided to it by forming a secure quantum key. The same information, with all the password, is then destroyed once received and this increases the security level even more.

Furthermore, the very smaller physical dimensions compared to the current standards configure much more varied uses. The current devices for quantum communication, in fact, can be much larger and can have sizes ranging from those of a refrigerator to that of an entire room.

Furthermore, the chip itself is made of industrial grade materials, such as silicon, which also facilitates its manufacture. This new device paves the way for better encryption methods, especially for online transactions and electronic communications in general.

To explain the importance of quantum technology in the context of security for online communications is Liu Ai Qun, NTU researcher in charge of the team that achieved these results: "In today's world, cyber security is very important because many our data is stored and communicated digitally. Almost all platforms and digital repositories require users to enter their passwords and biometric data, and as long as this is the case, they could be intercepted or decrypted. Quantum technology eliminates them because both the password and the information are integrated into the message sent, forming a quantum key. "

This is the "future of communication security", as Liu himself defines it, and this new study will stimulate even more the creation of similarly compact devices.



The chip has very small dimensions and uses quantum communication algorithms to improve the level of security (credit: NTU Singapore)