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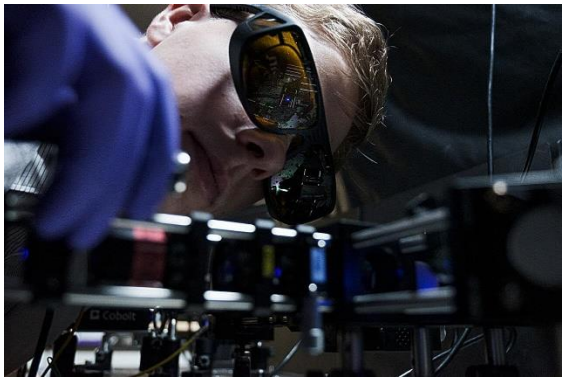
Quantum computing and photonics discovery potentially shrinks critical parts by 1,000 times



Researchers have made a discovery that could make quantum computing more compact, potentially shrinking essential components 1,000 times while also requiring less equipment. The research is published in Nature Photonics.

A class of quantum computers being developed now relies on light particles, or photons, created in pairs linked or "entangled" in quantum physics parlance. One way to produce these photons is to shine a laser on millimeter-thick crystals and use optical equipment to ensure the photons become linked. A drawback to this approach is that it is too big to integrate into a computer chip.

Now, Nanyang Technological University, Singapore (NTU Singapore) scientists have found a way to address this approach's problem by producing linked pairs of photons using much thinner materials that are just 1.2 micrometers thick, or about 80 times thinner than a strand of hair. And they did so without needing additional optical gear to maintain the link between the photon pairs, making the overall set-up simpler.

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