



大公社評英譯

量子通信大突破 科技自強新篇章

Quantum Communication Breakthrough: A New Chapter in Technological Self-Reliance

香港理工大學劉愛群教授團隊在量子通信領域取得重要突破，以自研的量子芯片為平台，近日成功搭建香港首個量子通信網絡，實現55公里光纖線路間的量子密鑰分發與信息加密傳輸，這也是全球量子通信實驗的最長距離。這一成就意義重大，既是香港創科發展的里程碑，也是在國家推動科技自立自強發展戰略中，以香港所長貢獻國家所需的完美示範。

當前，美國對華科技打壓封鎖愈演愈烈，高端芯片、光電集成模塊等關鍵技術成為「卡脖子」重點。近月發生的荷蘭政府「強搶」安世公司事件，再次凸顯國家推進科技自立自強的重要性、迫切性。香港作為國家對外開放的橋頭堡，科研體系既具國際視野，又深植國家需求。香港提供國際化的研發平台、自由的創新環境與頂尖的基礎人才；國家則提供市場規模、應用場景與戰略資源支持。兩者融合，便能催生具有全球競爭力的科技成果。

事實上，全球最長光纖量子通信網絡的測試成功，解決了量子信號在長途傳輸中的衰減問題，證明量子技術從實驗室走向現實的可行性，也展示了半導體技術與量子技術的深度融合，為後續規模化生產鋪平了道路。它將提升香港網絡基礎設施的安全性，也為大灣區乃至全國構建量子安全通道注入新動能。從全球視角看，此舉將吸引國際合作，強化香港作為國際創科中心的地位，由此衍生的加密產業鏈，將引領新質生產力的發展，帶來就業和經濟效益，將香港「背靠祖國、聯通世界」的優勢轉化為硬實力。

理大的成功並非孤例，香港科大在量子計算、中大在人工智能芯片、城大在第三代半導體材料等領域均不斷有進展，這是香港從傳統金融中心加速拓展為國際創科樞紐的生動寫照。展望未來，進一步整合香港的科研和資本資源與粵港澳大灣區內地城市在製造、應用方面的優勢，加快生產要素的跨境流通，形成「研發在香港、生產在深圳、應用在全國」的協生生態。

從這個意義上說，理大團隊的55公里量子通信網絡不僅是一條光纖，更是一條連接香港與國家未來的量子通道。它證明了，香港作為國際金融中心，可以成為國家「雙循環」戰略的重要平台，協助內地企業「走出去」布局全球市場；香港作為國際創科中心，可以在國家科技自立自強的偉業中，發揮突破「卡脖子」技術的尖兵作用。

近日教育部等七部門聯合推出《關於加強中小學科技教育的意見》，強調中小學是培養學生科學興趣、創新意識和實踐能力的重要時期，要求加強中小學科技教育，在師資培訓、課程設計方面作出改革，提供更多科學實驗設施，鼓勵中小學引入科學副校長或相關輔導人才，這對一直在強調加強STEM教育的香港來說，具有重要借鑒意義。

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The team led by Professor Liu Aiqun from The Hong Kong Polytechnic University has achieved a major breakthrough in the field of quantum communication. Using a self-developed quantum chip as the platform, the team recently successfully established Hong Kong's first quantum communication network, realizing quantum key distribution and encrypted information transmission over a 55-kilometer optical fiber link — the longest distance in global quantum communication experiments to date. This accomplishment is of great significance: it marks a milestone in Hong Kong's innovation and technology development, and serves as a perfect demonstration of how Hong Kong can leverage its strengths to contribute to the nation's strategic push for technological self-reliance and strength.

Currently, the U.S. suppression and **blockade** of China's technology sector are intensifying, with key technologies such as high-end chips and **optoelectronic integration modules** becoming focal points of "chokehold" restrictions. The recent incident of the Dutch government **forcibly** seizing Nexperia once again underscores the critical importance and urgency of the nation's drive for technological self-reliance and strength. As the country's forefront fortress for opening up to the world, Hong Kong's research ecosystem combines international vision with a deep alignment to national needs. Hong Kong provides a globalized **R&D** platform, a free environment for innovation, and top-tier foundational talent; the nation, in turn, offers market scale, application scenarios, and strategic resource support. The fusion of these two creates a powerful synergy that can **give rise to** technological achievements with global **competitiveness**.

In fact, the successful testing of the world's longest fiber-optic quantum communication network has resolved the issue of quantum signal attenuation in long-distance transmission, proving the feasibility of transitioning quantum technology from the **laboratory** to practical applications. It also demonstrates the deep integration of semiconductor technology with quantum technology, paving the way for subsequent large-scale production. This breakthrough will enhance the security of Hong Kong's network infrastructure and inject new momentum into building **quantum-secure** channels across the Greater Bay Area and the nation as a whole. From a global perspective, this accomplishment will attract international collaboration, strengthen Hong Kong's position as an international innovation and technology hub, and give rise to an **encryption** industry chain that will lead the development of new productive forces, generating employment and economic benefits. In doing so, it transforms Hong Kong's unique advantage of "backing the motherland while connecting the world" into tangible hard power.

The success of PolyU is by no means an isolated case. The Hong Kong University of Science and Technology (HKUST) has made continuous progress in quantum computing, The Chinese University of Hong Kong (CUHK) in artificial intelligence chips, and City University of Hong Kong (CityU) in third-generation semiconductor materials. These advancements vividly illustrate Hong Kong's accelerated transformation from a traditional financial center into an international innovation and technology hub. Looking ahead, further integration of Hong Kong's research and capital resources with the manufacturing and application strengths of mainland cities in the Guangdong-Hong Kong-Macao Greater Bay Area will accelerate the cross-border flow of production factors, forming a synergistic ecosystem of "R&D in Hong Kong, production in Shenzhen, and application nationwide".

In this sense, the 55-kilometer **quantum** communication

network developed by the PolyU team is not merely a **fiber-optic cable**, but a quantum channel connecting Hong Kong's present to the nation's future. It proves that Hong Kong, as an international financial center, can serve as a vital platform for the country's "dual **circulation**" strategy, assisting mainland enterprises in "going global" and expanding into international markets. At the same time, as an international innovation and technology hub, Hong Kong can play a pioneering role in the nation's great endeavor of technological self-reliance and strength, breaking through "**chokehold**" technologies.

Recently, the Ministry of Education and six other departments **jointly issued the "Opinions on Strengthening Science and Technology Education in Primary and Secondary Schools"**, emphasizing that primary and secondary schools represent a critical period for cultivating students' scientific interest, innovative awareness, and practical abilities. It calls for strengthening science and technology education in primary and secondary schools, with reforms in teacher training and curriculum design, the **provision** of more scientific experimental facilities, and the encouragement of schools to **appoint** science vice principals or relevant **advisory personnel**. This holds significant reference value for Hong Kong, which has long emphasized the enhancement of STEM education.

常用詞彙

● **blockade** (封鎖；封鎖線 n. / 封鎖，阻斷 v.)

The British imposed a naval blockade on Italy's coal supplies at the beginning of March 1940.

● **forcibly** (強制地；用力地；強行地 adv.)

The protesters were forcibly removed from the building by security guards.

● **competitiveness** (競爭力；好勝心 n.)

New machinery has enhanced the company's productivity and competitiveness.

● **laboratory** (實驗室，化驗室 n.)

This was then left in the laboratory near a window.

● **quantum-secure** (量子安全的 adj.)

There are even startups working on encryption that's futureproofed against quantum computers.

● **encryption** (加密；加密術 n.)

Strong encryption is used to protect sensitive data stored online.

● **quantum** (量子的 adj. / 量子 n.)

A quantum computer could crack this type of encryption in no time.

● **circulation** (流通；發行人；血液循環 n.)

Police have warned that there are a lot of fake \$50 bills in circulation.

● **chokehold** (掐脖子；嚴密控制 [常譯為「卡脖子」技術或「扼制」] n.)

The officer had him in a chokehold.

● **jointly** (共同地，聯合地 adv.)

The two companies jointly announced the launch of their new collaborative project in a press conference.

● **provision** (規定；供應；食物 n. / 為……提供所需物品 v.)

The contract includes a provision for late payment penalties.

● **appoint** (任命；委派；指定 v.)

They plan to appoint a new manager to run the department from next month.

● **advisory** (諮詢的；顧問的 adj. / 警報；諮詢意見 n.)

He acted in an advisory capacity only.

● **personnel** (員工；人事部門 n.)

The personnel department is responsible for recruiting and training new staff.

►理大利用自行研發的量子通信芯片，搭建香港首個量子通信網絡，並成功完成測試。

專項詞彙

● **optoelectronic integration modules** (光電集成模塊)

例句：These optoelectronic integration modules are widely used in high-speed communication systems.

● **R&D** (Research and Development 的縮寫：研究與開發)

例句：The firm invests heavily in R&D to stay ahead of its competitors.

● **fiber-optic cable** (光纖電纜；光纜)

例句：Fiber-optic cables can carry more data than traditional copper cables over long distances.

片語

● **give rise to** (引起；導致；使發生)

例句：Poor working conditions gave rise to a number of strikes in the industry.

應用建議：用於表達因果關係，強調某一因素或現象催生了新的結果、問題或趨勢，適用於社會分析、問題探究、現象評論等類型的寫作。可廣泛應用於經濟、社會、環境、科技等多個領域，既能描述積極結果（如技術創新引發產業升級），也能分析消極影響（如環境破壞導致生態問題），是連接原因與結果的核心表達，使邏輯關係更清晰。

句子分析

Recently, the Ministry of Education and six other departments jointly issued the "Opinions on Strengthening Science and Technology Education in Primary and Secondary Schools", emphasizing that primary and secondary schools represent a critical period for cultivating students' scientific interest, innovative awareness, and practical abilities.

主句結構

主語為「the Ministry of Education and six other departments」，謂語「jointly issued」，賓語「the Opinions」

現象①：後置定語：「on Strengthening Science and Technology Education in Primary and Secondary Schools」作為介詞短語，修飾先行詞「the Opinions」，說明文件主題。

現象②：賓語從句：「emphasizing that...」後接完整從句，從句中「primary and secondary schools are a critical period」用「機構／階段」對應「時期」。