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China launches world first quantum satellite

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China launched the world's first quantum satellite Tuesday, state media reported, in an effort to harness the power of particle physics to build an "unhackable" system of encrypted communications.

The launch took place at 1:40 a.m. in the southwestern Gobi Desert, the official Xinhua news service said, and comes as the U.S., Japan and others also seek to develop applications for the burgeoning technology.

Beijing has poured enormous resources into the race, one of several cutting edge projects the world's second largest economy has pursued as part of its massive national investment in advanced scientific research, on everything from asteroid mining to gene manipulation.

The satellite – nicknamed Micius after a 5th century B.C. Chinese philosopher and scientist – will be used in experiments intended to prove the viability of quantum technology to communicate over long distances.

It will also further investigations into some of the more unusual properties of sub-atomic particles, including "quantum entanglement", Xinhua said.

The term describes what Albert Einstein described as the "spooky" phenomenon of particles exerting influence on each other at a distance, including the ability for paired particles to mirror each other at faster-than-light speeds.

Unlike traditional secure communication methods, China's proposed system uses photons to send the encryption keys necessary to decode information.

The data contained in the bursts of subatomic particles is impossible to intercept: any attempts at eavesdropping will cause them to self-destruct, Xinhua said, letting users know that their communications have been compromised.

Scientists have shown the trick can be used to transmit messages over relatively short distances: the current record is around 300 kilometers, according to an article in the journal Nature.

But technical hurdles have kept long-range communication out of reach.

- A coin from a plane -

The satellite will attempt to send secure messages between Beijing and Urumqi, the regional capital of Xinjiang in the country's far west.

Success will require the satellite is precisely oriented to its earth-bound receiving stations, Xinhua said.

"It will be like tossing a coin from a plane at 100,000 metres above the sea level exactly into the slot of a rotating piggy bank," it quoted the project's chief commander, Wang Jianyu, as saying.

Developing the new technology is a major goal for Beijing, which included it in its most recent five-year plan, released in March.

"The newly-launched satellite marks a transition in China's role – from a follower in classic information technology (IT) development to one of the leaders guiding future IT achievements," Xinhua quoted Pan Jianwei, the satellite project's chief scientist.

China "can expect a global network of quantum communications to be set up around 2030," he said.

Beijing had previously identified the development of quantum technology as a national priority.

But Edward Snowden's revelations of spying operations by the US National Security Agency heightened China's pursuit of spy-proof methods.

The country is also one of several working on building the world's first quantum computer, which would use sub-atomic particles' properties in processors that can operate at speeds far faster than current technologies allow.