Eureka Prize for secure information breakthrough

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One of Australia's top science prizes has been awarded to researchers based at The Australian National University who have developed a fast and totally secure way to transmit information using laser beams.

The $10,000 Eureka Prize for Scientific Research was tonight given to the team based at the ANU Department of Physics for its quantum cryptography breakthrough, which uses light to convey data that is impervious to hackers and eavesdroppers.

"This award is testament to the ingenuity of these young researchers. I congratulate them for developing a technology that will place Australia at the forefront of this exciting field," ANU Vice-Chancellor Professor Ian Chubb said.

The technology developed at ANU in collaboration with theorists from the University of Queensland enables two parties, a sender and a receiver, to generate a secret electronic "key". This key can be used by the sender to encrypt a message that only the receiver with the matching key can decrypt.

"Where traditional cryptography is based on complex mathematics, we instead use the laws of physics to guarantee communication security," explains team leader Dr Ping Koy Lam, who also won a Eureka Prize in 2003 for his outreach activities on teleportation research.

The ability to guarantee information security would be of great benefit

to government and the corporate sector. The researchers are currently collaborating with the Department of Defence, as well as working towards the commercialisation of their technology for other clients.

“Although several groups around the world have quantum cryptographic technology, our group was one of the first in the world to demonstrate the transmission of a completely secret key via bright laser beams and common optics,” said Dr Thomas Symul.

“We recognise that there may be challenges along the way, but we’ve demonstrated that the technology works from end to end, and are confident of developing a viable commercial form. The Eureka Prize is a further validation of our efforts,” said Vikram Sharma, researcher and CEO elect of QuintessenceLabs, the commercial spin-off of this research.

Other researchers involved in the breakthrough include PhD candidate Andrew Lance from ANU, and Professor Timothy Ralph and PhD candidate Christian Weedbrook from the University of Queensland.

Source: Australian National University