

Singapore National Academy of Science Young Scientist Awards 2019

Physical, information & Engineering Sciences category

Dr Lim Ci Wen, Charles

Assistant Professor, Department of Electrical and Computer Engineering and Centre for Quantum Technologies, NUS

“For his research on quantum cryptography that paves the way to practical quantum-safe networks”

Dr Lim’s research focus is in quantum information science, centering on quantum communications and cryptography. He began his career in the development of finite-key security proofs for quantum key distribution¹ (QKD) systems. Together with his colleagues, he successfully developed finite-key security proof techniques for a wide range of QKD protocols. More recently, Dr Lim and his international collaborators have demonstrated the world’s fastest QKD system, generating up to 23 Mbit/s secret key rate, thus enabling ultra-high-speed quantum secure communication for the first time.

Dr Lim joined the department of electrical and computer engineering of NUS in 2017. There, he started to include experimental quantum communications and cryptography research into his research. Since then, he has secured competitive research grants. These include the prestigious National Research Foundation (NRF) Fellowship in 2019, an NRF Quantum Engineering Programme grant in 2019, and an overseas research grant from the Asian Office of Aerospace R&D in 2018. With these resources, he aims to develop the necessary know-how and quantum chip-based technology that will enable a truly scalable and fast quantum-safe network in Singapore, where different nodes are connected by quantum-secured mobile devices.

He has produced more than 30 peer-reviewed articles. His work has been featured in prestigious publications such as Nature Photonics, Nature Communications, and Physical Review X. He is also an active member of the quantum technology industry, where he is currently an editor for an on-going ISO quantum cryptography standardisation effort, providing leadership and technical expertise to the international IT security techniques committee.

¹ Quantum key distribution is a secure communication method which utilises a cryptographic protocol involving components of quantum mechanics