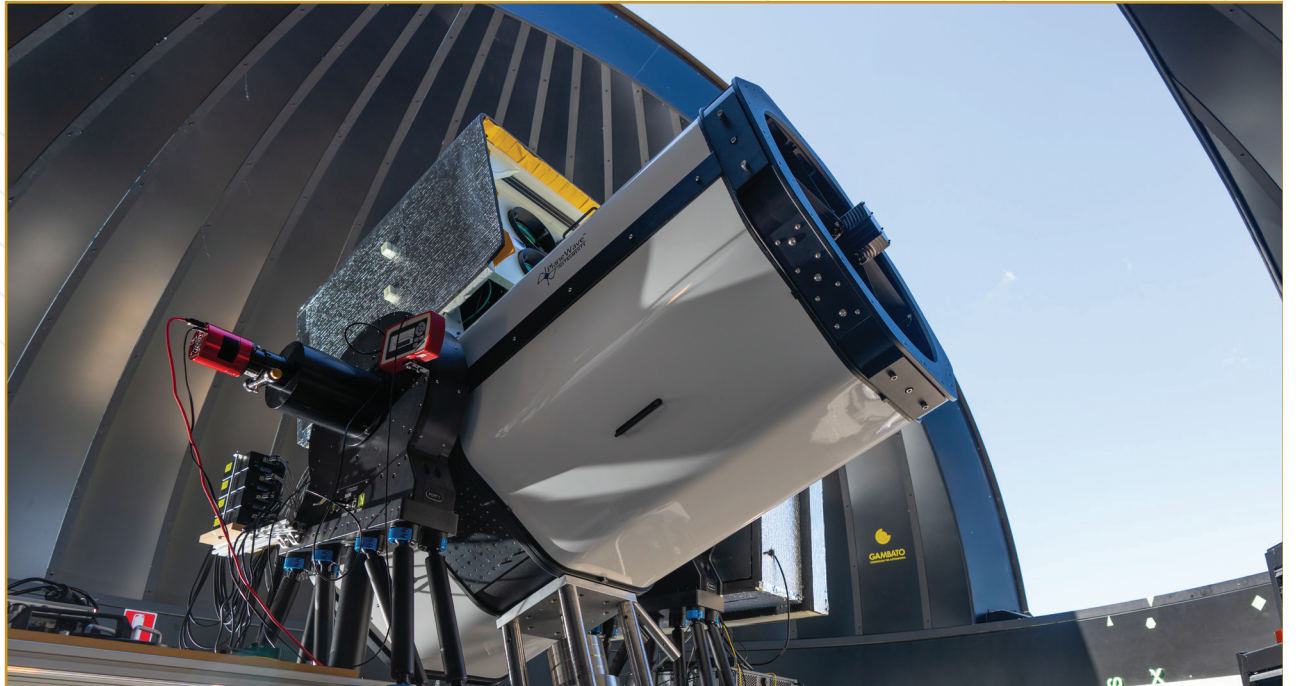




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FUTURE OF COMMUNICATIONS: FROM LIGHT TO QUANTUM

Our society is critically reliant on satellite to earth communications for a range of daily activities, from navigation and weather predictions to supporting national security. Current radio frequency systems carry limited data, creating a data downlink bottleneck.

Optical communications promises a technology revolution by using lasers to communicate at data rates at least 10x faster than existing radio transmission and avoiding spectrum licensing constraints. It is also compatible with quantum communications for enhanced security. This will enhance system-wide resilience by augmenting existing telecommunication infrastructure.

This provides a clear path to meet the growing global demand for space-to-ground communications and support the expanding satellite communication market.



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AUSTRALIA'S FIRST QUANTUM OPTICAL GROUND STATION

The ANU Advanced Communications Program is working to create an integrated, quantum-upgraded, laser communications network, providing significantly improved telecommunications capability, security, and resilience across Australia. In December 2023, ANU launched the Quantum Optical Ground Station (QOGS), a first for Australia.

In April 2026, the ANU QOGS supported NASA's Artemis II Mission – the first crewed flight back to the moon in over 50 years, with lunar optical communications capability. QOGS achieved a long fault-free run at the highest possible data rate of 260 Mbps and the longest optical link of the Mission at over 400,000 km.

The QOGS is equipped with advanced instrumentation including adaptive optics and quantum technology to enable high performance and enhanced security. ANU technology enables communication links in challenging environments for a range of mission scenarios from LEO and GEO to lunar and deep space. With quantum capability built in, this ground station will also provide the underlying infrastructure to connect quantum devices and establish a quantum internet for improved computation, sensing accuracy, and provably secure communications.

The ANU Quantum Optical Ground Station is supported by funding from the ACT Government, with additional support from the Australian Space Agency, CSIRO, and the ANU Institute for Space.

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Laser communications promise a technology revolution by offering data rates at least 10x faster than existing radio systems. ”

Are you interested in how secure and how fast optical communications can be for your mission?

PLEASE CONTACT:



Professor Francis Bennet
ANU InSpace Mission Specialist
francis.bennet@anu.edu.au
+61 2 6125 8900

Dr Kate Ferguson
Associate Director
Strategic Projects ANU InSpace
katherine.ferguson@anu.edu.au
+61 2 6125 0220

