

Stuttgart Quantum Communication Fiber Testbed - Metropolitane Quantenverbindung

Two simplex dark fibers (17.9 km each) for quantum channels. Local university of Stuttgart fiber network to connect to Deutsche Telekom. One duplex DWDM fiber link for conventional DWDM data/protocol channels (17.9 km of standard single mode fibers - SSMF).

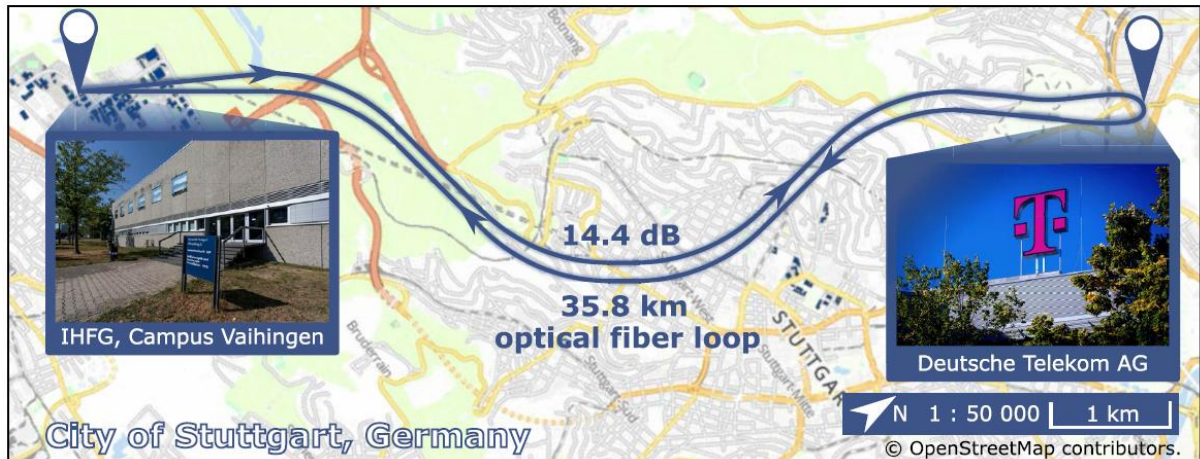


Fig. 1 An illustration of Stuttgart Quantum Communication Fiber Testbed Fiber Links & Location. Figure reproduced from (all rights reserved): [Strobel T. et al., Opt. Quantum 2, 274 \(2024\).](#)

A: Brief Information

Testbed Title	Stuttgart Quantum Communication Fiber Testbed-Metropolitane Quantenverbindung
Start Point	University of Stuttgart, Stuttgart
End point	Deutsche Telekom AG, Stuttgart
Institution/Organization	Deutsche Telekom, T-Labs Research Test Network for Quantum Communication, University of Stuttgart
Contact	Dr.-Ing. Ralf-Peter Braun, ralf-peter.braun@t-online.de Dr. Marc Geitz, marc.geitz@telekom.de Prof. Peter Michler, p.michler@ihfg.uni-stuttgart.de Dr. Simone Portalupi, s.portalupi@ihfg.uni-stuttgart.de
Status	Joint decisions by University of Stuttgart and Deutsche Telekom

B: Technical Information

Type of Transmission	fiber
Length [km]	17.9
Losses [dB]	Depends strongly on the used optical wavelengths, and on the local campus configuration

Supported Wavelengths [nm]	Related to the standard SSMF, including O-, E-, S-, C-, L-, and U-Bands
Type of Fiber	Standard single mode fiber (SSMF, SM)
Type of Deployment	underground
Polarization Stabilization	No
Quantum Communication Infrastructure	Triggered quantum dot sources of single and entangled photon pairs at telecom wavelength.
Available Infrastructure for external Parties	Partially available through University of Stuttgart and Maybe possible but not guaranteed for Deutsche Telekom fiber links and co-location.

C: Additional Information

Linked Projects	<ul style="list-style-type: none">• QR.N: https://www.forschung-it-sicherheit-kommunikationssysteme.de/projekte/quantenrepeater-net-qr.n• QR.X: https://quantenrepeater.link/
Press Release and Publications	<ul style="list-style-type: none">• Our T-Labs Research Test Network as an Enabler for Quantum Communication• Quantum repeaters for secure communication, 01.2025• High-fidelity distribution of triggered polarization-entangled telecom photons via a 36 km intra-city fiber network, 09.2024
Demonstrated Milestone	Demonstrated distribution of entangled photons from semiconductor quantum dots.
Outlook	
Suggested Use Cases	Perform quantum cryptography and quantum communication tasks along a deployed network
Other Comments/ Information	