We1G-1 Invited 08:30-09:00

Toward Practical Quantum Communication Networks: Mode-Pairing QKD and Beyond

Xiongfeng Ma
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We review mode-pairing MDI-QKD enabling sqrt(eta) scaling without global phase locking, then discuss field deployment, quantum-dot single-photon untrusted relays, and long-lived ion-memory entanglement as complementary routes to practical quantum networks.

We1G-2 Invited 09:00-09:30

Fully Dynamic and Automated 4-Node Switched QKD Network with PUF-Based Authentication

Nikolaos Makris[1], Persefoni Konteli[1], Evgenia N. Sassalou[2], Stylianos A. Kazazis[2], Alkinoos Papageorgopoulos[1], Stefanos Vasileiadis[3], Konstantinos Tsimvrakidis[1], Symeon Tsintzos[2], George M. Nikolopoulos[4], George T. Kanellos[1]
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We demonstrate a centrally automated four-node dynamic switched Quantum Key Distribution network with real-time, on-demand dynamic PUF-based authentication per link and experimentally evaluate its system performance.

We1G-3 09:30-09:45

OPA-Based Free-Space QKD System with Direct Fiber-Network Compatibility

Minchul Kim[1,2], Junsang Oh[1], Byung-Seok Choi[1], Joong-Seon Choe[1], Ju Hee Baek[1], Chun Ju Youn[1], Jong-Bum You[3], Hyo-Hoon Park[2], Hamza Kurt[2], Hoon Kim[2]
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We experimentally demonstrate a free-space quantum key distribution (QKD) system employing an optical phasedarray(OPA) chip-based transmitter and a receiver connected via 6-km fiber link, enabling seamless compatibility and integration with existing fiber-based QKD networks.

We1G-4 09:45-10:00

Demonstration of 4 × 10 Mbaud FDM-CV-QKD System

Donghyeok Lee[1,2], Jaehyeok Han[1,2], Yong-Su Kim[2], Sunghyun Bae[1]
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We demonstrate a four-channel FDM-CV-QKD system using 10-Mbaud Gaussian-modulated signals. The fourchannel system enhances secret key rates for distances up to 71 km, achieving a 3.7-fold gain over the single-channel case in the back-to-back scenario.