

Novel directions for advancing satellite based quantum communication

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Abstract

Extending today' s internet, the Quantum Internet will readily transfer quantum bits, rather than classical bits, between users near and far and over multiple different channels and could be used for secure communications, quantum computer networks and metrological applications. I will discuss recent advances on implementations and tools useful for generating and distributing photonic quantum entanglement over large distances using satellites. I will present some recent research on quantum channel advancements including time-bin encoding, reference-frame-free protocols and single-photon emitters. I will also present an overview of the upcoming Canadian quantum communication satellite QEYSSAT.
