第17部

分散型量子計算のネットワーク応用技術

Van Meter Rodney

第１章　Abstract

In 2014 and 2015, AQUA members published the world's first book on quantum networking, four papers on quantum computing in top-tier journals, and a workshop paper on the security of quantum repeater networks.

第２章　Quantum Networks

AQUA members are leading the push to create a true Quantum Internet, capable of sharing quantum entanglement across the planet. Such a Quantum Internet will improve security, enable distributed quantum computation (much like the original ARPANET), and make sensors more accurate.

In 2014 and 2015, AQUA members published the world's first book on quantum networking [58] and a workshop paper on security in quantum repeater networks [59]. Three additional papers under review propose a means of using shipping containers to distribute quantum entanglement [60], improve the efficiency of transfers across a Quantum Internet using network coding [61], and, crucially for a true internetwork, propose and analyze a mechanism for coupling entanglement between disparate types of networks [62].

第３章　Quantum Computation

In 2014 and 2015, WIDE members published papers deepening our understanding of the motivation for building quantum computers [63], proposing new superconducting hardware [64], establishing a method for and the ultimate limitations of floating point arithmetic for quantum computers [65], and ultimately evaluating detailed designs of intermediate-scale processors [66]. An additional paper under review further extends the superconducting work [67].