Colloquium of the Institute for Quantum Information Science

3:00 pm Wednesday 13 July 2005 in SB 146

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Title: **Towards Long-Distance Quantum Communication**

Abstract: The last years have seen a remarkable advance of experimental realizations of applications of Quantum Communication. The most important example is Quantum Cryptography that is now at the verge of becoming an industrial application. Future challenges include the increase of the secret key rate, and, more generally, the extension of the transmission distance for quantum information. In my talk I will present recent experiments that tackle the second challenge: I will report on quantum teleportation in a quantum relay configuration, on long-distance entanglement swapping, and I will present a photonic quantum information interface that may find application in a quantum repeater, where mapping of traveling qubits, encoded into telecommunication photons, onto stationary atomic qubits, featuring resonance at much shorter wavelengths, may be necessary.

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