

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Alternative Design for Quantum Cryptographic Entangling Probe HOWARD BRANDT, U.S. Army Research Laboratory — An alternative design is given for an optimized quantum cryptographic entangling probe for attacking the BB84 protocol of quantum key distribution [1], [2]. The initial state of the probe has a simpler analytical dependence on the set error rate to be induced by the probe than in the earlier design. The new device yields the same maximum information to the probe for a full range of induced error rates. As in the earlier design, the probe contains a single CNOT gate which produces the optimum entanglement between the BB84 signal states and the correlated probe states.

[1] H. E. Brandt, Phys. Rev. A **71**, 042312 (2005).

[2] H. E. Brandt, “Design for a quantum cryptographic entangling probe,” to appear in J. Mod. Optics (2005).

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Date submitted: 19 Oct 2005

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