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**Quantum mechanics braces for the ultimate test.** (English) Zbl 1226.81057

[Science 331, No. 6023, 1380-1382 \(2011\)](#).

Summary: Physicists are on a quest to build the ultimate quantum cryptography system: one that users could trust implicitly, even if they had bought it from their worst enemy. First, however, they have to plug a few stubborn holes in one of the bedrocks of modern physics: quantum mechanics. The microscopic world that quantum mechanics describes is a bizarre place where nothing is certain and the act of observation changes things. Over the past 40 years, that description has been put to the test in a series of elegant experiments that have shown it to be true. Although most physicists find the results convincing, these experiments did skirt around a few tiny loopholes by which reality could have fooled physicists into thinking that quantum mechanics paints a complete picture. It's these loopholes that groups around the world are competing to close. The winners will have the satisfaction of settling one of the most stubborn problems in physics. As a bonus, they will also hold the key to the perfect quantum security system.

**MSC:**

[81P94](#) Quantum cryptography (quantum-theoretic aspects)

[94A60](#) Cryptography

[81P68](#) Quantum computation

Cited in **2** Documents

**Full Text:** [DOI](#)