

Abstract

A qubit generating unit 40 generates a qubit having a predetermined quantum state. A qubit encoding unit 70 performs quantum encoding of the generated qubit. A first pseudo-random number generating unit 60 generates a
5 first pseudo-random number from secretly shared information 3 which has been secretly shared with the quantum receiving device 200 in advance. A quantum modulator 80 performs quantum modulation of the qubit on which quantum encoding has been performed based on the first pseudo-random number and sends the modulated qubit to the quantum receiving device 200. A second pseudo-
10 random number generating unit 220 generates a second pseudo-random number from secretly shared information 21 which has been secretly shared with the above quantum sending device 100 in advance synchronously with generation of the above first pseudo-random number. A qubit demodulator 230 performs quantum demodulation of the qubit which has been received from the quantum demodulator
15 80 based on the second pseudo-random number.



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