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Coordination of time-stamps in optical communication experiments without clock signal sending KIYOTAKA HAMMURA, DAVID WILLIAMS, Hitachi Cambridge Laboratory — The problem is how to implement coordination of time-stamps shared between sender and receiver in optical communications without clock signal sending. The coordination is essential for sharing time sequence information between the two. Clock signal free implementation of it will save the cost for implementing the clock signal channel. In our experiment, we devised a special bit sequence and put the sequence on top of data sequence to be sent, then the whole sequence was sent to receiver along a single optical channel. In theory, thanks to the specialty of the pattern embedded, the first data bit at the sender side will be identified on the receiver's time axis. The results were as expected. We succeeded in demonstrating our theory. The method has a potential to saving a great deal of cost and physical burden, including implementing various transmission channels. The nearest next target is to incorporate this method into a quantum cryptography system.

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