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## **【267】 Confidentiality of the hashing protocol and applications to the quantum repeater**

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We focus on the generation of entanglement among distant parties in a secure way, and with high communication rates.

We show that hashing protocols, a particular class of entanglement purification protocols, enable arbitrary privacy in the presence of noise, even in a setting where the information which noise was applied leaks to the eavesdropper.

As an application thereof we propose a quantum repeater based on hashing. The overhead per repeater station is constant, thanks to the finite yield of hashing. This is in stark contrast to all other long-distance quantum communication schemes previously considered, and opens the way for long-distance communication of big quantum data.

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