

# Partners and Quantum Information Capsule

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A quantum field is capable of playing a role of quantum information storage. However, it is nontrivial where the field stores information in a total pure state. This question is important in the context of black hole information loss problem. So far, a common picture is that of a mode and its purification partner sharing the information quantum mechanically [1, 2]. In this talk, we introduce the concept of quantum information capsule (QIC), a single mode perfectly storing information in a pure state, as a new class of information carrier [3, 4]. Partners and QICs enable us to track information scrambled by unitary evolution. We analyze the time-evolution of a QIC in a discretized scalar field to demonstrate the diffusion of information in entangled pure states.

## References

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