Nonlocality in Quantum Theory
- Counter-intuitively correlated information -

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Motivation

We try to understand counter-intuitive behaviours of quantum nonlocality in the context of information processing.

Originality

We proposed to characterise the quantum search algorithm from the viewpoint of temporal analogue of "nonlocality" between different computational steps (times).
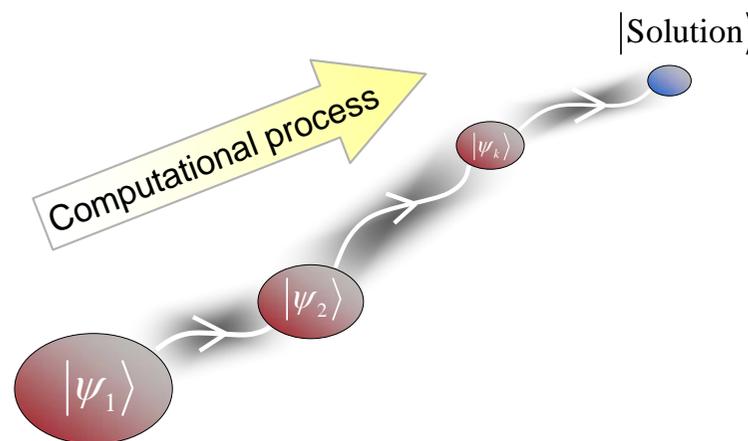
Impact

It is expected that the understanding of nonlocality in quantum information science will provide a new insight into the foundations of quantum theory.

$$\frac{1}{\sqrt{2}}\left(|00\rangle_{AB} + |11\rangle_{AB}\right)$$

If we make local measurements on entangled quantum systems, they behave as if they affected each other in a nonlocal way.

It looks as if different computational steps were "nonlocally" correlated in the quantum search algorithm.

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