Contribution ID: **220** Type: **Poster presentation**

Subcycle single-qubit quantum gates –an analytical approach

Wednesday 7 September 2022 19:10 (20 minutes)

Decoherence in quantum computing can be reduced by using quantum gates with operation time shorter than the coherence time of the system. Ultrafast single-qubit gates have been demonstrated on various physical systems but still remains slow for some cases with respect to subcycle timescales where the operation time is shorter than the characteristic timescale of the system, determined by the inverse of relevant transition frequency between its states. In order to develop such subcycle quantum gates, we found their analytical expressions for general pulse shapes by applying a unitary perturbation theory. We identified the corresponding rotation as a functional of a given pulse. Whether a specific operation is allowed within a subcycle driving scheme may be answered using the expressions.

Is this abstract from experiment?

No

Name of experiment and experimental site

N/A

Is the speaker for that presentation defined?

Yes

Details

Andrei Chuchalin, Korea Advanced Institute of Science and Technology, South Korea, https://www.kaist.ac.kr/en/

Internet talk

No

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