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Realization of Geometric Landau-Zener-Stückelberg Interferometry JUNHUA ZHANG, JINGNING ZHANG, XIANG ZHANG, KIHWAN KIM, Center for Quantum Information, Tsinghua University — We report the first experimental realization of a geometric Landau-Zener-Stückelberg (LZS) interferometry inspired by the proposal of Ref. [1] in a trapped ion system. We observe a pure geometric phase through successive Landau-Zener (LZ) transitions and its robustness against introduced intensity fluctuation in the driving field. The trapped ion system is an ideal two-level (qubit) system to realize the geometric LZS interferometer and to simulate effects of imperfections in other qubit technologies for the interferometry. In particular, we use two hyperfine ground states in an 171Yb^+ ion for a qubit system and apply microwaves with various detunings and intensities for the driving field. This work was supported by the National Basic Research Program of China Grant 2011CBA00300, 2011CBA00301, 2011CBA00302, the National Natural Science Foundation of China Grant 61073174, 61033001, 61061130540. KK acknowledges the support from the Thousand Young Talents program.

REFERENCE:

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- [2] Zhang Xiang, et al., accepted in Phys. Rev. Lett.

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