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Observation of Majorana fermion states in rf-SQUIDs constructed on Pb-Bi_2Te_3 surface LI LU, YUAN PANG, JIE SHEN, FANMING QU, ZHAOZHENG LYU, JUNHUA WANG, JUNYA FENG, JIE FAN, GUANGTONG LIU, ZHONGQING JI, XIUNIAN JING, CHANGLI YANG, Institute of Physics, Chinese Academy of Sciences, QINGFENG SUN, X. C. XIE, Peking University, LIANG FU, Massachusetts Institute of Technology — Recently, much attention has been paid to search for Majorana fermions in solid-state systems. Among various proposals there is one based on radio-frequency superconducting quantum interference devices (rf-SQUIDs), in which a 4π-perioded current-phase relation is expected if Majorana fermion states exist. In this talk we report observations of truncated 4π-perioded (i.e., 2π-perioded but fully skewed) oscillatory patterns of contact resistance, on rf-SQUIDs constructed on the surface of three-dimensional topological insulator Bi_2Te_3. The results reflect the existence of Majorana fermion states in the devices.

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