"Observation of truncated quantum interference patterns on rf-SQUIDs constructed on Bi$_2$Te$_3$ surface"

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**Abstract:** Recently, much attention has been paid to search for Majorana bound state (MBS) in solid-state systems. Among various searching proposals there is one based on radio-frequency superconducting quantum interference devices (rf-SQUIDs), in which a unique $4\pi$-perioded current-phase relation (CPR) is expected if MBS exists. Here we report our observations of two simultaneously-truncated and complementarily-correlated patterns of contact resistance oscillation on Pb rf-SQUIDs constructed on the surface of three-dimensional topological insulator Bi$_2$Te$_3$. The results support the existence of two branches of CPR which are $4\pi$-perioded if without truncation. We ascribe the truncation to quasiparticle poisoning which happens unavoidably in our devices at every odd multiples of half flux quantum.

2:00pm
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Host: Liang Fu