

Joint CQSE and CASTS Seminar

Weekly Seminar
Mar. 24, 2017 (Friday)

TIME Mar. 24, 2017, 14:30 ~ 15:30
TITLE Photon-mediated correlated charge transport between Josephson junction arrays
SPEAKER Prof. Watson Kuo
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Abstract

One-dimensional(1D) array of Josephson junctions exhibit large and universal response under microwave irradiation in the charge dominant regime. As such the array is applied as an on-chip photon detector for studying microwave emission from a biased 1D junction array. The experiment indicates that Cooper-pair tunneling produces stronger microwave than quasi-particle tunneling, making the array a good emitter in superconducting state. In general, the emitting microwave amplitude scales as square root of bias current. Owing to the photon sending and receiving mechanism mentioned above, correlated charge transport between a pair of insulating arrays can be observed. The current-current correlation appears in arrays separated by tens of micrometers and the distance dependence of this correlation is discussed. We foresee that such a photon-mediated correlation between two distant quantum devices may find its application in remote transferring classical and quantum information.

