

The 278th MANA Seminar



Probing the Dynamics of Andreev States in Coherent Normal/Superconducting ring

Chair: Dr. Katsuyoshi Komatsu (MANA)



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A dissipationless current is known to flow through a thin (subnanometer) insulating barrier between two superconductors S with a superconducting phase difference, the well-known Josephson effect. This supercurrent may also flow through a long (micrometer) non-superconducting metal wire at low temperatures. In order to investigate the evolution of the current phase relation in superconductor/normal metal/superconductor (SNS) junctions with high frequency phase driving, we have inductively coupled one NS ring to a multimode superconducting resonator. The in-phase (x') and out-of-phase (x'') ac magnetic susceptibility of the ring is deduced from the dc flux dependence of the resonance frequency and quality factor of the resonances from 300 MHz up to 6 GHz. Different behaviors are observed for frequencies below and above the inverse of the diffusion time through the normal wire. These results are compared to recent theoretical findings and stimulate future similar investigations on more exotic junctions.

Venue: Auditorium, 1F, WPI - MANA Bldg.,

Date: July 27th, Friday Time: 15:30-16:15

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