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QUANTUM TUNNELING INDUCING AC AND DC EFFECT IN A MODIFIED JOSEPHSON JUNCTION

Tuesday, 2 October 2018 17:46 (1 minute)

We study a novel model of Josephson junction and investigate the appearance of tunnelling current. Using quantization technique, we prove the junction to be modelled as a two-level system where the tunnelling current is induced by the Landau - Zener transition. We prove that, the current passing through the junction is caused by LZ tunnelling with the nature of that probability current changing significantly with charging energy. In the case of sinusoidal energy, the system mimics a Landau-Zener-Stckelberg interferometer with the resulting current exhibiting AC behaviour.

Apply to be
 considered for a student
   award (Yes / No)?

yes

Level for award
 (Hons, MSc,
   PhD, N/A)?

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