Microwave Enhanced Cotunneling in SET Transistors

Cotunneling in single electron tunneling (SET) devices is an error process which may severely limit their electronic and metrologic applications. Here is presented an experimental investigation of the theory for adiabatic enhancement of cotunneling by coherent microwaves. Cotunneling in SET transistors has been measured as function of temperature, gate voltage, frequency, and applied microwave power. At low temperatures and applied power levels, including also sequential tunneling, the results can be made consistent with theory using the unknown damping in the microwave line as the only free parameter.