IV characteristics of array of antidots on superconducting Nb film

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We tuned the Shapiro steps in the I-V curves of superconducting thin film with square array of nano-engineered periodic anti-dots (holes) through applied temperatures; without applied rf frequencies. These Shapiro steps in the current-voltage characteristics of nano-engineered superconducting film investigated at temperature well below transition temperature. These I-V characteristic shows the sudden jumps (Shapiro steps) in the superconducting thin film with 2D array of antidots. These steps come out when the interstitial vortex lattice is formed and due to high vortex velocities, instability occurs and the system shows a step.

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