

Abstract Submitted
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Observation Of Shapiro Steps In The IV Characteristics Of Thin Nb Films Deposited On Square Arrays Of Magnetic Quantum Dots?

DAVID MAST, YONG SONG, Department of Physics, University of Cincinnati — We have studied the IV characteristics of a superconducting thin film of niobium that has been deposited over a 2D array of 200nm diameter Fe quantum dots. A set of dips appear in the dynamical resistance vs current curves of this Nb film below its superconducting transition temperature when the film is biased with both dc and ac currents. These local minima in the dynamical resistance display a well defined power and frequency dependence like that observed for Shapiro Steps in 2D Josephson Junction Arrays (JJAs). The results of the frequency and the power dependence of these minima will be compared to previous experiments investigating integer Shapiro steps in site-disordered niobium-gold SNS JJAs. The influence of temperature and applied magnetic fields on these minima is also reported.

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