

Abstract Submitted
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Flux avalanches triggered by microwave depinning of superconducting vortices AHMAD AWAD, FARKHAD ALIEV, Universidad Autonoma de Madrid Spain, WELDESLASSIE ATAKLTI, ALEJANDRO SILHANEK, VICTOR MOSHCHALKOV, Katholieke Universiteit Leuven Belgium, YURI GALPERIN, University of Oslo Norway, VALERI VINOKUR, Argonne National Laboratory USA — We observe abrupt changes in broadband microwave permeability of thin Pb superconducting films as functions of the microwave frequency and intensity, as well as of external magnetic field. These changes are attributed to vortex avalanches generated by microwave induced depinning of vortices close to the sample edges. We map the experimental results on the widely used theoretical model assuming reversible response of the vortex motion to a. c. drive. It is shown that our measurements provide an efficient method of extracting the main parameter of the model- depinning frequencies for different pinning centers. The observed dependences of the extracted depinning frequencies on the microwave power, magnetic field and temperature support the idea that the flux avalanches are generated by microwave induced thermomagnetic instabilities.

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