

Abstract Submitted
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Frequency dispersion of nonlinear response of thin superconducting films¹ SEAN BYRNES, SCOTT DIETRICH, SERGEY VITKALOV, Physics Department, City College of the City University of New York, New York 10031, USA, ANDREY SERGEEV, SUNY Research Foundation, SUNY at Buffalo, Buffalo, NY14226, USA — Effect of microwave radiation on transport properties of $La_{2-x}Sr_xCuO_4$ atomically thin films grown by Molecular Beam Epitaxy were studied. Resistance changes induced by the applied microwaves with variable frequencies (0.1-20GHz) and powers were measured at different temperatures near the superconducting transition ($\sim 8 - 15K$). Strong drop of three orders of magnitude of the nonlinear response is found within a few GHz of a cutoff frequency ($\omega_{cut} \sim 2GHz$). Expected frequency dependence vastly underestimates the sharpness of this drop. Numerical simulations considering an *ac* response which follow the *dc* I-V characteristics of the films replicate the low frequency behavior, but fail above the threshold frequency ω_{cut} . The observed phenomenon suggests significant decrease of the effectiveness of vortex-antivortex dissociation induced by the oscillating superconducting condensate.

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