

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Voltage Oscillations in Silver Doped  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$**  ATILGAN ALTINKOK, MURAT OLUTAS, KIVILCIM KILIC, ATILLA KILIC, Abant Izzet Baysal University — Nonlinear transport phenomena and time effects were investigated by the time evolution of sample voltage ( $V - t$  curves) on long time scales in Ag-doped  $\text{YBa}_2\text{Cu}_3\text{O}_{7-x}$  sample (YBCO/Ag). We also investigated influence of bidirectional square wave current with various periods ( $P$ ) and dc currents ( $I$ ) on the evolution of  $V - t$  curves in YBCO/Ag sample material at different temperatures ( $T$ ) and external magnetic ( $H$ ) fields. It was observed that a nonlinear response seen in  $V - t$  curves to bidirectional square wave (BSW) current with sufficiently short periods or sufficiently low amplitude reflects itself as regular sinusoidal-type voltage oscillations. The observed oscillating mode was correlated to the dynamic competition between pinning and depinning. Further, the similarity between the flux dynamics and the charge density waves is considered as a possible explanation of voltage oscillations in YBCO/Ag. Detailed analysis of  $V - t$  curves and voltage oscillations reveals that adding of Ag causes degradation in both intergranular and surface pinning of YBCO material.

Atilgan Altinkok  
Abant Izzet Baysal University

Date submitted: 07 Feb 2011

Electronic form version 1.4