

Abstract Submitted  
for the MAR12 Meeting of  
The American Physical Society

Sorting Category: 09.5 (E)

**Surface pinning effects in Ag doped superconducting polycrystalline  $Y_1Ba_2Cu_3O_{7-x}$**  ATILGAN ALTINKOK, MURAT OLUTAS, KIVILCIM KILIC, ATILLA KILIC, Abant Izzet Baysal University — The current-voltage measurements ( $I$ - $V$  curves) with different current sweep rates ( $dI/dt$ ) were carried out to investigate the effects of silver on the flux dynamics in Ag doped superconducting polycrystalline  $Y_1Ba_2Cu_3O_{7-x}$  sample (YBCO/Ag). Standard and reverse procedures were used in the measurements of  $I$ - $V$  curves. In the standard procedure, the dc driving current is cycled up and down; whereas, in the reverse procedure, the current is first cycled down and, then, cycled up. The reverse procedure enables us to investigate the flux motion evolving from the outer surface of the sample to its interior. Upon cycling transport current, the  $I$ - $V$  curves of the YBCO/Ag sample exhibit hysteresis effects for both procedures and are sensitive to the variation of  $dI/dt$ . The experimental data reveal that the irreversibilities in the  $I$ - $V$  curves of undoped YBCO are more prominent than those of YBCO/Ag. One of the main observations in the  $I$ - $V$  curves of YBCO/Ag is the peculiar voltage jumps and drops. It was found that these instabilities depend strongly on the magnitude of external parameters  $dI/dt$  and  $H$ . The instabilities and short and long lived plateau regions observed in  $I$ - $V$  curves were explained in terms of plastic flow of flux lines along easy motion channels which are considered mainly as metallic silver paths in the YBCO/Ag sample. In order to understand better the flux dynamics evolving in YBCO/Ag, the results of present measurements were compared to our previous studies on polycrystalline samples of undoped

- Prefer Oral Session  
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Date submitted: 19 Dec 2011

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