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Search for Hysteresis in Longitudinal and Transverse Voltage in Superconducting Films PHILLIP BROUSSARD, ANNA SPENCER, Covenant College — The claim by Glazman (Sov. J. Low Temp. Phys. **12**(7), 1986) of hysteresis in Transverse Voltage (TV) as an indication of TV being due to Vortex-Anitvortex annihilation has inspired us to search for such hysteresis. Though we have looked at TV previously, in that case we could only look at hysteresis in the TV and the sweep rate of the current was asymmetric. We have now improved our apparatus to have symmetric sweep rates for current up as well as down, and now we can examine both the TV and the longitudinal voltage (LV) as a function of the sweep rate. Films of niobium, niobium zirconium alloy, and niobium nitride have been examined. Hysteresis is observed in all films, both in TV and LV signals. The hysteresis increases as the temperature of the films are lowered below T_c and as the frequency (f) of the sweep increases. We see evidence of a \sqrt{f} dependence to the hysteresis, which is inconsistent with a thermal hysteresis explanation.

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