

Abstract Submitted  
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**Vortex activation energy in high-Tc superconductors from transport measurements: new systematics**<sup>1</sup> YURI L. ZUEV, JOHN SINCLAIR, JAMES R. THOMPSON, University of Tennessee, SUNG HUN WEE, CLAUDIA CANTONI, DAVID K. CHRISTEN, Oak Ridge National Laboratory — From electrical transport measurements on thin films of YBCO with and without nanoprecipitate “columnar defects,” we extract information about the activation energy for vortex creep. We also obtain new scaling between temperature, critical current density  $J_C$ , and the power law index  $n$  describing the voltage-current relation  $V \propto I^n$ . This scaling occurs in the range of field and temperature where  $J_C$  decays as a power-law of magnetic field. In this regime the  $n$ -value can unexpectedly increase as applied field increases. We will discuss implications of these observations and compare systems with and without such scaling.

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