

Abstract Submitted  
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**Towards ordered flux flow in A15 superconductor V<sub>3</sub>Si at high fields**<sup>1</sup> R. KHADKA, A.A. GAPUD, University of South Alabama, A.P. REYES, L. LUMATA, P.L. KUHNS, National High Magnetic Field Laboratory, D.K. CHRISTEN, Oak Ridge National Laboratory — The motion of flux quanta is observed in a high-quality superconducting single crystal of V<sub>3</sub>Si with weak pinning and significantly reduced thermal fluctuations due to a critical temperature of less than 17 K. This opens up the possibility of approaching ordered, Bardeen-Stephen flux flow (BSFF). The flux flow resistivity  $\rho_{ff}$  associated with dissipative flux motion is observed in V-I curves as a high-current transition to an ohmic curve whose dissipation level is *below* the normal-state level. Details of overcoming technical difficulties of using high currents are described. BSFF is expected to be manifested by a linear dependence of  $\rho_{ff}$  on applied field  $H$ . Measuring from fields of 6 T up to 20 T, an approach to ohmic curves characteristic of BSFF are clearly distinguishable, along with other interesting features such as the “peak” effect in critical current  $J_c(H)$  seen only when the pinning energy density is comparable to the elasticity of the flux medium. This and further data and their interesting ramifications are discussed.

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Albert Gapud  
University of South Alabama

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