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Free flux flow in two single crystals of V_3Si with slightly different pinning strengths[1] O. GAFAROV, A.A. GAPUD, S. MORAES, University of South Alabama, J.R. THOMPSON, University of Tennessee and Oak Ridge National Laboratory, D.K. CHRISTEN, Oak Ridge National Laboratory, A.P. REYES, National High Magnetic Field Laboratory — Results of recent measurements on two very clean, single-crystal samples of the A15 superconductor V_3Si are presented. Magnetization and transport data already confirmed the "clean" quality of both samples, as manifested by: (i) high residual resistivity ratio, (ii) very low critical current densities, and (iii) a "peak" effect in the field dependence of critical current. The (H,T) phase line for this peak effect is shifted in the slightly "dirtier" sample, which consequently also has higher critical current density $J_c(H)$. High-current Lorentz forces are applied on mixed-state vortices in order to induce the highly ordered free flux flow (FFF) phase, using the same methods as in previous work. A traditional model by Bardeen and Stephen (BS) predicts a simple field dependence of flux flow resistivity $\rho_f(H)$, presuming a field-independent flux core size. A model by Kogan and Zelezhina (KZ) takes core size into account, and predict a clear deviation from BS. In this study, $\rho_f(H)$ is confirmed to be consistent with predictions of KZ, as will be discussed.

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