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Effects of charge density waves on flux dynamics in weak-pinning single crystals of $NbSe_2$: free flux flow, flux-core size effects, and unexpected doubling of$J_c(H)$ 'peak effect'[1] PETER FAVREAU, ALBERT A. GAPUD, SUNHEE MORAES, U. South Alabama, LANCE DELONG, U. Kentucky, ARNEIL P. REYES, NHMFL, JAMES R. THOMPSON, U. Tennessee-Knoxville and ORNL, DAVID K. CHRISTEN, ORNL — The interaction of two different ordering schemes – charge density waves (CDWs) and superconductivity – is studied in high-quality samples of $NbSe_2$, particularly in the motion of magnetic flux quanta. More specifically, the study is on the effect of "switching off" the CDW phase – effected by doping with Ta – on the magnetic-field Hdependence of: (i) the Lorentz-force-driven free flux flow (FFF) resistivity ρ_f associated with the ordered motion of vortices, and (ii) critical current density J_c. FFF is achieved for the first time in this material. The field dependence of ρ_f deviates from traditional Bardeen-Stephen flux flow and is more consistent with effects of flux *core size* as predicted by Kogan and Zelezhina. However, the suppression of CDW's seems to have no significant effect on these properties. On the other hand, $J_c(H)$ shows a surprising *double* peak for the CDW-suppressed sample –contrary to previous studies in which the J_c peak was shown to *disappear.* Possible mechanisms are discussed.

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Albert Gapud
U. South Alabama

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