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Moving flux quanta, driven by high density currents in low-impurity samples of V_3Si, $LuNi_2B_2C$, and $NbSe_2$: Ordered flow and core-size effects S. MORAES, R.P. KHADKA, A.A. GAPUD, U. of South Alabama, A.P. REYES, L.L. LUMATA, National High Magnetic Field Lab, J.R. THOMPSON, U. of Tennessee, D.K. CHRISTEN, Oak Ridge National Lab — There is incomplete understanding about the dissipative motion of magnetic flux quanta in type II superconductors, especially under large Lorentz forces. This is mainly due to the technical challenges involving the application of large electric currents and the rarity of samples wherein flux quanta are relatively free to move – i.e., samples with weak "pinning" – which commonly make it impossible to observe dynamic phases. Progress towards overcoming these challenges is described, along with clear observations of flux-flow phases in high-quality samples of three "low T_c" superconductors, V_3Si, $LuNi_2B_2C$, and $NbSe_2$. Evidence of the rarely observed Bardeen-Stephen flux flow – a highly ordered, collective motion of flux quanta in near-unison – will be presented. These observations have also enabled an examination of a model by Kogan and Zelezhina [Kogan and Zhelezina, *Phys Rev B* **71**, 134505 (2005)] predicting the effect of a field-dependent flux *core size* on ordered flux flow, as will be discussed.
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