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**Vortex creep and thermal depinning within strong pinning theory**
ROLAND WILLA, MARTIN BUCHACEK, VADIM B. GESHKENBEIN, GIANNI BLATTER, Institute for Theoretical Physics, ETH Zurich, 8093 Zurich, Switzerland — Vortex pinning in type-II superconductors can occur through the collective action of many pins (weak collective pinning scenario) or through plastic deformations induced by a low density of defects (strong pinning scenario). For the latter case, a new formalism has recently be developed [1-4] to provide a quantitative link between the microscopic pinning landscape and experimentally accessible quantities describing pinning on a macroscopic level. Examples are the critical current density $j_c$, the $I$-$V$ characteristics, or the $ac$ Campbell length $\lambda_C$. Inspired by the original work of Larkin and Brazovskii [5,6] on density wave pinning, we have extended the strong pinning formalism to account for thermal depinning of flux lines and vortex creep. [1] G. Blatter, V. B. Geshkenbein, and J. A. G. Koopmann, Phys. Rev. Lett. **92**, 067009 (2004). [2] A. U. Thomann, V. B. Geshkenbein, and G. Blatter, Phys. Rev. Lett. **108**, 217001 (2012). [3] R. Willa, V. B. Geshkenbein, and G. Blatter, Phys. Rev. B **92**, 134501 (2015). [4] R. Willa, V. B. Geshkenbein, R. Prozorov and G. Blatter, Phys. Rev. Lett. (in press). [5] A. Larkin and S. Brazovskii, Solid State Communications **93**, 275 (1995). [6] S. Brazovskii and A. Larkin, Synthetic Metals **86**, 2223 (1997).

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