

Abstract Submitted
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Domain patterns in type-I superconducting films. ANDREJS CEBERS, Institute of Physics, Salaspils, LV-2169, Latvia, CATHERINE GOURDON, VINCENT JEUDY, TAKANORI OKADA, Institut des Nanosciences de Paris, CNRS UMR 7588, Universities Paris 6 and 7, France, INSTITUTE OF PHYSICS, UNIVERSITY OF LATVIA TEAM, INSTITUT DES NANOSCIENCES DE PARIS, CNRS UMR 7588, UNIVERSITIES PARIS 6 AND 7 TEAM — Like many other systems (magnetic fluids, Langmuir polarized layers. . .) type-I superconducting (SC) films exhibit a phase modulation known as the intermediate state (IS). It consists of coexisting domains of the normal state (NS) and SC phases. The striking similarity of the domain patterns for various systems has stimulated the development of general models [1] based on the competition between the interface energy and the long-range interaction between domains. However, for superconductors, the long-range magnetic interaction between domains has to be modified to take properly into account screening currents [2]. This leads to substantial improvement of the description of the IS as it will be illustrated through 3 examples: (i) the impeded growth of NS circular domains, (ii) the stability limit of the circular shape, (iii) the nucleation and collapse of SC domains in the NS phase. [1] A.T. Dorsey and R.E. Goldstein, Phys. Rev. B 57, 3058 (1998) [2] A. Cebers et al, Phys. Rev. B 72, 014513 (2005)

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