ERRATUM

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Erratum

Surface superconductivity in a wedge

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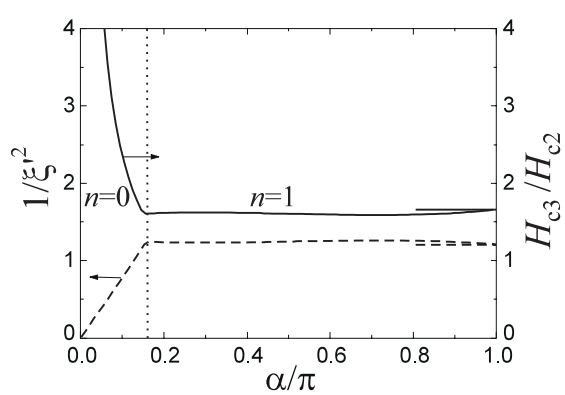
PACS. 74.80−g – Spatially inhomogeneous structures.
PACS. 74.20De – Phenomenological theories (two-fluid, Ginzburg-Landau, etc.).
PACS. 74.25Dw – Superconductivity phase diagrams.

Two coefficients are wrong in eq. (16); the correct last term in the first square brackets and the last term in the curly brackets are, respectively,

$$-\frac{2\alpha}{\pi n}\rho\frac{\partial\psi_n(\rho,\varphi)}{\partial\rho} \qquad \text{and} \qquad +4\sin^2(\pi n\varphi/\alpha)\frac{\partial\psi_n(\rho,\varphi)}{\partial\varphi}\,.$$

The extrema shown in fig. 2 turn out to be spurious; the correct fig. 2 is as shown below.

With the *variational* approach, the optimal $1/\xi'^2$ is provided by the trial function (18) with $n = 0$ for the smaller angles $0 < \alpha/\pi < 0.16$ and with $n = 1$ for the larger angles $0.16 < \alpha/\pi \leq 1$. The "kink" at $\alpha/\pi \approx 0.16$ results from the choice of our variational trial functions. At larger angles, there exists a surface-enhanced superconducting state with the current along the whole boundary, penetrating the nearest vicinity of the edge. At smaller angles, we find that a confined circulating superconducting current appears in the vicinity of the edge, sustaining higher magnetic fields than the nucleation field at the plane



superconductor surface. For $\alpha \to 0$, with our trial function with $n = 0$, the nucleation field behaves asymptotically as $H_{c3}/H_{c2} = \sqrt{2/3}\,\alpha^{-1}$.

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