Errata

Erratum: Theoretical analysis of *R*-line shifts of ruby subjected to different deformation conditions [Phys. Rev. B 43, 879 (1991)]

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A number of minor errors in this paper are listed here. None of these errors change the earlier findings.

(1) The first term in Eq. (3) should be 0.104 and not 0.21.

(2) In Table II, there should be a negative sign in front of the square brackets in the third expression.

(3) In Eq. (23), the first term in all the matrix elements involving Q (or Q^*) should be positive and not negative.

(4) The coefficient of the second term in Eq. (28) should be 918.9 and not 530.5.

(5) The use of Eq. (38a) for analyzing R-line separation under uniaxial stress compression along the a axis (last paragraph of Sec. V E 2) is not rigorously correct. However, as pointed out in our subsequent paper, Phys. Rev. B **48**, 2929 (1993), because of the modest compression involved, the findings are unchanged even with the correct analysis.

(6) Equation (A1) in the Appendix is not correct; a negative sign was left out from the C terms in the fourth row and fourth column. Also, the approximate procedure used to obtain the eigenvalues in that Appendix is not necessary. The eigenvalues can be obtained analytically; see Eq. (8) in Phys. Rev. B **48**, 2929 (1993).

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Erratum: Superconducting vortex with extended core [Phys. Rev. B 45, 4799 (1992)]

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The conclusion regarding the extended core in the bridge-type circuit is incorrect. A generalization of Eq. (1) is

$$2(df/dx)^2=2(df/dx)_r^2+(f_r^2-f^2)[2-f^2-f_r^2-2J^2/(ff_r)^2] ,$$

where f_r and $(df/dr)_r$ are the order parameter and its slope at some arbitrary reference point. When the current density $J=0$ and $f_r=0$ is chosen, a valid solution of the above equation with $c^2\equiv\sqrt{2}(df/dx)_r>1$ is

$$f(x)=c\,\mathrm{sc}(cx/\sqrt{2}|m)\mathrm{dn}(cx/\sqrt{2}|m) ,$$

where $m=(1+c^{-2})/2$. This solution had escaped the author previously because the reference point search was limited to finding the proper extremal values of $f(x)$. The possible existence of such a solution was pointed out by Lòpez and Castro and by Haley (private communication). The new solution has lower energy than that found previously. There is no extended vortex core in this specific bridge-type circuit unless a normal metal is inserted in the middle of the central branch. Figures 3 and 4 should be replaced by the following figures:

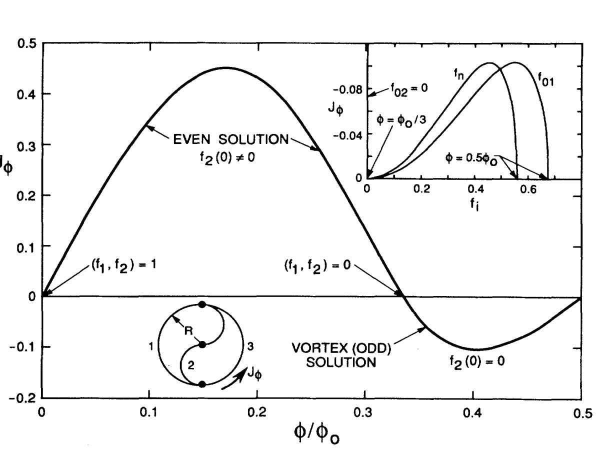

FIG. 3. Normalized persistent current density J_ϕ as a function of magnetic flux for $R/\xi(T)=0.5$ for the even and odd (vortex) solution of the shown bridge-type circuit. The inset shows the extremal and nodal order parameters for the vortex solution. For $\frac{1}{3}<\phi/\phi_0<0.428$ the central branch $f(x)$ is calculated with $c^2<1$ and f_r being an extremum of $f(x)$, and for $0.428<\phi/\phi_0<0.5$ with $c^2>1$ and $f_r=0$.

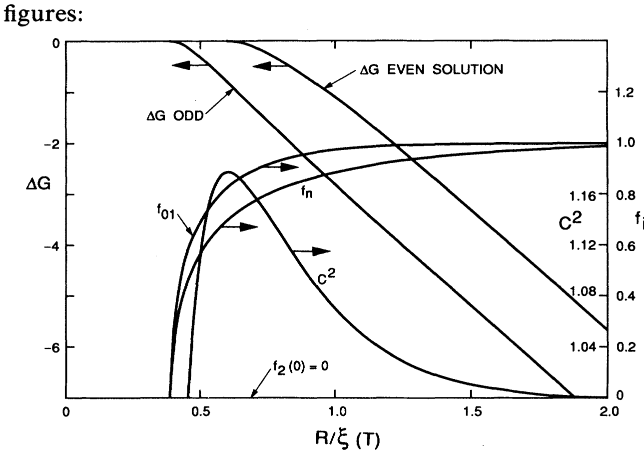

FIG. 4. Normalized Gibbs free-energy difference ΔG as a function of $R/\xi(T)$ for $\phi=0.5\phi_0$ for the odd (vortex) and even solution, normalized by $H_c^2(T)S\xi(T)/8\pi$, where H_c is the thermodynamic critical field and S the cross-sectional area of the wires. Also shown is the corresponding extremal and nodal order parameter and $\sqrt{2}(df/dx)_r=c^2>1$ for the odd solution with $f_r=0$. For $\phi=0.5\phi_0$ the current density $J_\phi=0$ for all $R/\xi(T)$ values.