



Erratum: Nonreciprocal charge transport and subharmonic structure in voltage-biased Josephson diodes [Phys. Rev. B **109**, 024504 (2024)]

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A mistake has been made in Sec. IV of the original paper when taking the zero-temperature limit of the general expression for the conductance (47) of a normal-superconducting (NS) junction. The correct form of Eq. (48) in the original paper must read

$$\frac{G(V)}{G_0} = \frac{1}{2} [\tilde{I}_1(eV) - \tilde{I}_2(-eV)], \quad (1)$$

such that electron- and hole-type scattering channels ($s = 1, 2$) contribute to $G(V)$ with opposite signs of V . Since our results in Secs. IV B and IV C are based on Eq. (48), they have to be corrected accordingly. In particular, Eq. (50) should be replaced by

$$\frac{G(V)}{G_0} = 1 + \frac{1}{2} \sum_{\alpha=\pm} e^{-2\tilde{\gamma}_\alpha(\alpha eV)} = 1 + |a_1(eV)|^2, \quad (2)$$

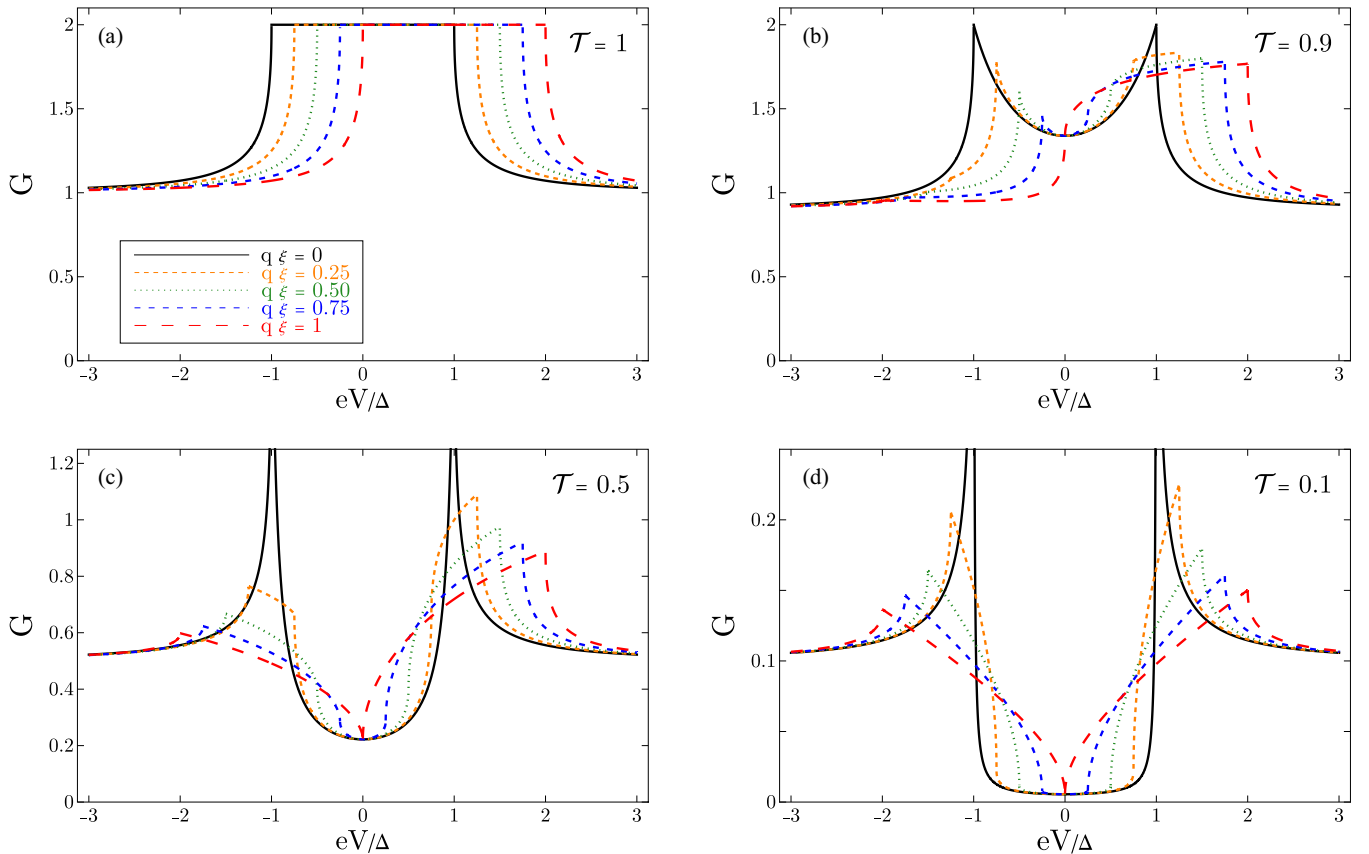


FIG. 1. Zero-temperature nonlinear conductance $G(V)$ (in units of $G_0 = 2e^2/h$) for a NS junction with several values for the dimensionless Cooper pair momentum parameter $q\xi$. This figure corrects Fig. 3 in the original paper. (a) is for transparency $\mathcal{T} = 1$ and was obtained from Eq. (3). (b)–(d) are for $\mathcal{T} = 0.9, 0.5, 0.1$, respectively, and were obtained from Eqs. (1) and (2).

where we took into account that $|a_1(eV)| = |b_2(-eV)|$, and hence Eq. (51) should read

$$\frac{G(v, q\xi)}{G_0} = 1 + \Theta(1 - |v - q\xi|) + \frac{\Theta(|v - q\xi| - 1)}{[|v - q\xi| + \sqrt{(v - q\xi)^2 - 1}]^2}. \quad (3)$$

This equation clearly reveals an asymmetry of $G(V) \neq G(-V)$ under voltage reversal for $q \neq 0$, and hence one can find rectification in the NS case. The corrected version of Fig. 3 in the original paper is shown in Fig. 1.

Unfortunately, we have missed this effect in our general expression (47) in the original paper for $G(V)$. The subsequent analysis at zero temperature, due to the above mistake in Eq. (48), led us to the erroneous conclusion that the symmetry relation $G(V) = G(-V)$ is always satisfied. Our corrected results agree with the results of Ref. [1].

We thank M. Davydova, L. Fu, and M. Geier for alerting us to the above point.

[1] M. Davydova, M. Geier, and L. Fu, Nonreciprocal superconductivity, [arXiv:2407.01681](https://arxiv.org/abs/2407.01681).