Erratum: First-principles calculations of spin relaxation times of conduction electrons in Cu with nonmagnetic impurities [Phys. Rev. B 77, 092406 (2008)]

D. V. Fedorov, P. Zahn, M. Gradhand, and I. Mertig
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The results for the anisotropic spin relaxation time T_1 presented in our paper were obtained using the symmetry group of the nonrelativistic Hamiltonian. In reality, the spin-orbit interaction in Eq. (3) reduces the symmetry. The corrected Fig. 2 is given below. The momentum relaxation time τ is unchanged.

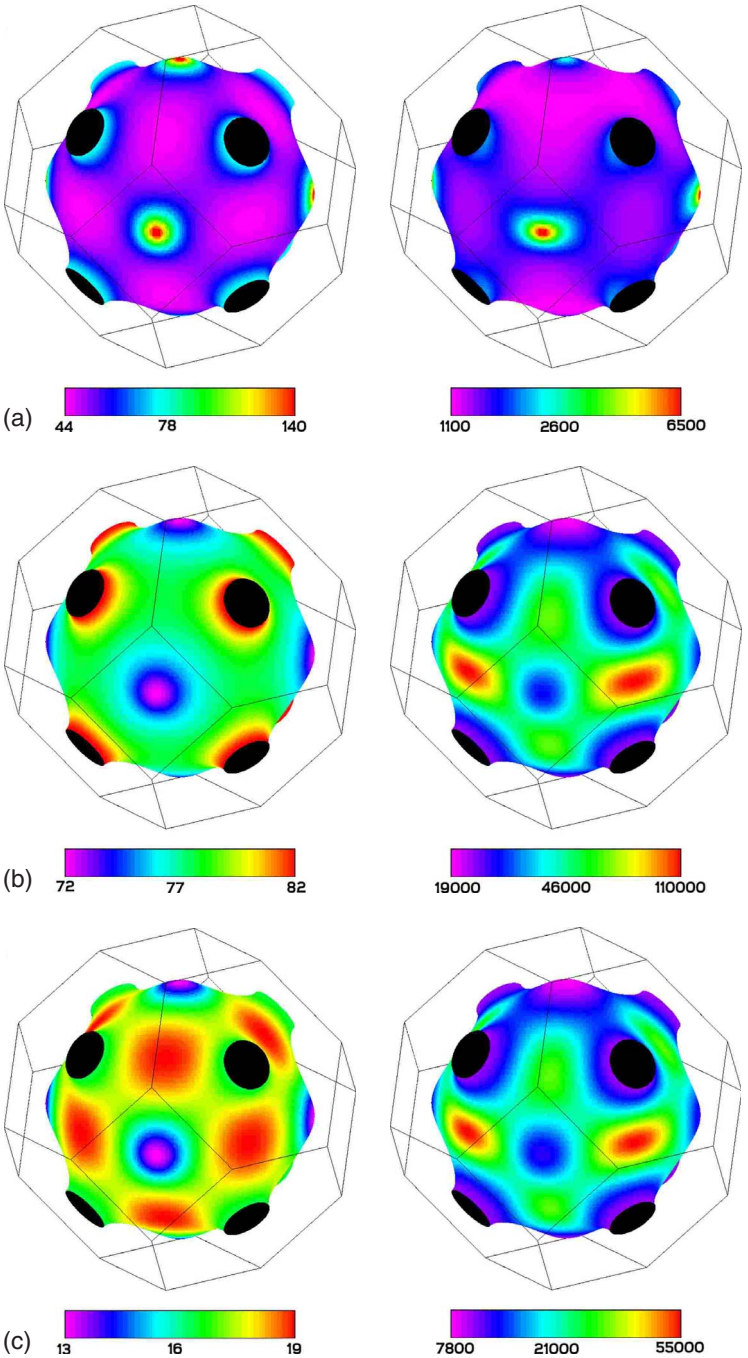

FIG. 2. (Color online) Anisotropic τ (left) and T_1 (right) on the Fermi surface of Cu for (a) Ni, (b) Zn, and (c) Ga impurities with a defect concentration of 1 at. %. All values on the logarithmic scale are given in femtoseconds.

TABLE I. Spin relaxation time T_1 and momentum relaxation time τ in bulk Cu with an impurity concentration of 1 at. %. The experimental results for T_1 were derived from the data for ΔH of Tables III and IV of Ref. 20. For the calculation of τ, the scheme described in Ref. 29 was applied. All values are given in picoseconds.

	Other calculation[a]	CESR[b]	Our results	
Impurity	T_1	T_1	T_1	τ
Ni	4.0	2.2 ± 0.2	1.6	0.057
Zn	125	64 ± 9	49	0.078
Ga	33	30 ± 4	22	0.017
Ge	14	14 ± 2	10	0.0072
As		8.6 ± 0.7	5.7	0.0043
Au	2.0 ± 0.4	0.62 ± 0.21	0.56	0.48

[a]Reference 22.
[b]Reference 20.

The integration over the Fermi surface in Eq. (5) was performed in our paper using the irreducible part of the Brillouin zone corresponding to the symmetry group of the non-relativistic Hamiltonian. It is six times smaller than the irreducible part of the Brillouin zone in the presence of the spin-orbit coupling. The correction causes small deviations of the averaged values for T_1 presented in the column "Our results" of Table I. The momentum relaxation time τ is not influenced at all.

In fact, the correction gives a reduction of the values of T_1 for all $\mathbf{k}$ points with nonzero component along z axis (quantization axis). As a consequence, we obtain a systematic reduction of the averaged values for T_1 in comparison to the published ones.

The values of the spin-flip scattering cross section σ_{sf} calculated by Eq. (7) have to be corrected along these lines. But, the corresponding changes are nearly invisible in Fig. 1 due to the logarithmic scale. We emphasize that the whole discussion of our results as well as the conclusions made in our paper are still valid.