Erratum: Dependence of Berry's phase on the sign of the *g* factor for conical rotation of a magnetic field, measured without any dynamical phase shift [Phys. Rev. A 83, 052109 (2011)]

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In this paper, the phase shift between the $m_F = -1$ state with a negative g factor and the $m_F = 1$ state with a positive g factor for a whole rotation of the magnetic field was measured for $\pi/3 < \theta < 2\pi/3$, where θ is an angle between the rotation axis and the direction of the magnetic field. The phase shift was $4\pi \cos\theta$ on the basis of the phase at $\theta = \pi/2$, and we concluded that the Berry phase depended on the sign of the g factor. However, it was not reasonable. Afterward, we measured the phase shift between the two states for a whole region of $0 \leqslant \theta \leqslant 2\pi$ [1]. As stated in Ref. [1], if we rewrite the measured phase shift on the basis of the phase at $\theta = 0$, it is coincident with $-4\pi(1 - \cos\theta)$, which is independent of the sign of the g factor [2]. Thus, we confirmed that the Berry phase depends on the spin component and the signed solid angle but does not depend on the sign and the magnitude of the g factor as originally predicted by Berry [3]. Therefore, the abstract and the conclusion should be corrected similarly.

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[1] A. Morinaga and Y. Hasegawa, Phys. Rev. A **92**, 013403 (2015).
[2] S. Welte, C. Basler, and H. Helm, Phys. Rev. A **89**, 023412 (2014).
[3] M. V. Berry, Proc. R. Soc. London, Ser. A **392**, 45 (1984).