Erratum: Lateral Spin Valve Based on the Two-Dimensional CrN/P/CrN Heterostructure [Phys. Rev. Applied 11, 064015 (2019)]

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In the original paper, the Curie temperature (T_C) was not calculated correctly. In this Erratum, we provide a correction to the published results.

First, the energies of the 120° Néel magnetic state presented in Fig. 1(a) in the original paper were calculated for a wrong magnetic configuration. The revised data are shown in Fig. 1.

FIG. 1. (a) Energy difference between the FM and Néel states in single-layer CrN calculated per Cr atom as a function of the Hubbard U parameter. The insets show the alignment of spins for the different magnetic configurations.

Second, an incorrect expression for the Brillouin-zone area was used in Eq. (6) in the original paper in the calculation of T_C . The correct area should read $\Omega = 8\pi^2/\sqrt{3}a^2$. This leads to the following modification of the final expression for T_C [Eq. (7) in the original paper]:

$$k_B T_C = \frac{8\pi\sqrt{3}}{3} \frac{S+1}{S} \frac{JS^2}{\ln \left[(\Delta + 4\pi\sqrt{3}JS^2)/\Delta \right]}. \quad (7)$$

Both corrections imply that the T_C values provided in the original paper were underestimated. The revised version of Table I is provided in this Erratum. The reported changes do not affect the conclusions drawn in the original paper.

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TABLE I. Net magnetization per Cr atom (M), Heisenberg exchange interaction (J), on-site anisotropy energy (Δ), and Curie temperature (T_C) estimated in this work for monolayer CrN, bilayer CrN/P, and trilayer CrN/P/CrN. The values for monolayer CrN are given for two different values of the Hubbard U parameter. In other cases, $U = 3$ eV is assumed.

System	M (μ_B)	J (meV)	Δ (meV)	T_C (K)
CrN ($U = 0$ eV)	3.00	4.90 ^a	0.47	496 ^a
CrN ($U = 3$ eV)	3.00	11.41 ^a	0.73	1084 ^a
CrN/P	2.53	13.33 ^a	0.11	968 ^a
CrN/P/CrN	2.63 ^b	12.29 ^a	0.12	910 ^a

^aCorrected value.

^bValue for the FM configuration. In the AFM case, $M = 0.16\mu_B$.