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## ERRATUM

In P. G. Grinevich, A. E. Mironov, and S. P. Novikov "Zero level of a purely magnetic two-dimensional nonrelativistic Pauli operator for spin-1/2 particles" (Vol. 164, No. 3, September, 2010, pp. 1110–1127), there is an inaccuracy.

We here describe how it can be corrected and provide essential clarifications. In Sec. 3.2, which is devoted to the genus $g = 1$, we described the example of an exactly solvable (algebraic–geometric) periodic magnetic field $B$ with zero flux through the elementary cell; this field was the sum of a smooth field with the one-quantum flux and the $\delta$-function with the opposite flux. This example contains an inaccuracy: it is degenerate. The correct example with the same properties requires three, not two, "intersection" points. It was presented in our paper online at http://arxiv.org/abs/1004.1157v3. These examples were also analyzed there.

A principal question is whether adding the Aharonov–Bohm-type term (a periodic sum of $\delta$-functions) with the opposite flux ($B = \widetilde{B} - \delta$) to the smooth periodic magnetic field $\widetilde{B}$ such that the total flux through the cell is zero *deforms the spectrum* near the ground state $\epsilon_0$ (which vanishes because of supersymmetry). The spectrum has a gap near zero for a smooth field $\widetilde{B}$.

We mention that the notion of the singular operator spectrum requires a more rigorous definition. Our treatment is based on the theory of Schrödinger operators with periodic coefficients (i.e., with zero magnetic field flux through the elementary cell). Our definition of the operator is based on the analyticity properties of the manifold of complex-valued Bloch functions where we perform the limit transition from smooth fields to fields of the desired type. The dispersion law becomes degenerate in our case. In this limit, the two-dimensional complex manifold of Bloch functions has a connected component of the form $M^2 = \mathbb{C} \times \Gamma''$ with the Bloch function of the form $\Psi(u,p) = e^{uz} \cdot \Psi''(p,z)/\sqrt{c}$, where $(u,p) \in M^2$, while $\varepsilon\colon M^2 \to \mathbb{C}$ vanishes, $\varepsilon \equiv 0$. We obtain the real part by imposing the condition $u = u(p)$ from the abovementioned paper, and this condition selects the family $T^2 \subset M^2$ with the unimodular multipliers $|\widetilde{\varkappa}_x| = |\widetilde{\varkappa}_y| = 1$. The curve $\Gamma'' = \{(0,p)\} \in M^2$ is the limit curve for the complex Fermi curves of zero level for the smooth fields. It has a single point of intersection with the torus $T^2$. We then have the isomorphic magnetic-Bloch manifold for the field $\widetilde{B}$ without the $\delta$-term, $\widetilde{M}^2 = M^2$, $\widetilde{\Psi}(u,p) = \Psi(u,p)\sigma|\sigma'|^{-1}$, while the multipliers remain the same. *The "quantized" $\delta$-term therefore does not affect the spectrum near zero in the purely magnetic case.* A small perturbation due to the electric potential $\lambda V$ ensures a nonzero dispersion law $\varepsilon_\lambda\colon M^2 \to \mathbb{C}$, stratifying the manifold $M^2$ (with the set of resonance points removed) into curves and its real part $T^2$, revealing itself in the Hilbert space, into real curves. Does it depend on the $\delta$-term? We do not yet know.

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