

Erratum: Electromagnetic spectral properties and Debye screening of a strongly magnetized hot medium [Phys. Rev. D **94**, 114034 (2016)]

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(Received 15 January 2026; published 5 February 2026)

DOI: [10.1103/vt9b-ssg9](https://doi.org/10.1103/vt9b-ssg9)

There is a mistake in the calculation of the dilepton rate in the presence of magnetic fields, specifically in Eqs. (39), (45), and (46). A factor of q_f^2 or equivalently, α_{em} is incorrectly extracted. This is unjustified, since the spectral function is flavor dependent in the presence of external fields, unlike the zero-field case in Eq. (38), where the extraction of such a factor is permissible. In view of this, Eqs. (39) is modified accordingly, as given below,

$$\begin{aligned} \frac{dN}{d^4x d^4p} &= \frac{\alpha_{\text{em}} n_B(p_0)}{12\pi^3} \sum_f q_f^2 [\rho_f(p_{\parallel}, p_{\perp})]_m \\ &= \frac{N_c \alpha_{\text{em}} n_B(\omega)}{12\pi^5} \sum_f \frac{q_f^2 |q_f B| m_f^2}{p_{\parallel}^2 p_{\perp}^2} e^{-p_{\perp}^2/2|q_f B|} \Theta(p_{\parallel}^2 - 4m_f^2) \left(1 - \frac{4m_f^2}{p_{\parallel}^2}\right)^{-1/2} [1 - n_F(p_+^s) - n_F(p_-^s)], \end{aligned} \quad (39)$$

where the f in the subscript of the spectral function ρ is used to signify its flavor dependence. There will be similar corrections in Eqs. (45) and (46) as given below,

$$\begin{aligned} \frac{dN^m}{d^4x d^4p} &= \frac{\alpha_{\text{em}} n_B(p_0)}{2\pi^3} \frac{|eB| m_l^2}{p_{\parallel}^2 p_{\perp}^4} \left(1 - \frac{4m_l^2}{p_{\parallel}^2}\right)^{-1/2} \sum_f q_f^2 [\rho_f(p_{\parallel}, p_{\perp})]_m \\ &\times \frac{N_c \alpha_{\text{em}} n_B(\omega)}{2\pi^5} \sum_f \frac{q_f^2 |eB| |q_f B| m_f^2 m_l^2}{p_{\parallel}^4 p_{\perp}^4} \Theta(p_{\parallel}^2 - 4m_l^2) \left(1 - \frac{4m_l^2}{p_{\parallel}^2}\right)^{-1/2} \Theta(p_{\parallel}^2 - 4m_f^2) \left(1 - \frac{4m_f^2}{p_{\parallel}^2}\right)^{-1/2} \\ &\times e^{-p_{\perp}^2/2|q_f B|} [1 - n_F(p_+^s) - n_F(p_-^s)], \end{aligned} \quad (45)$$

and

$$\begin{aligned} \frac{dN^m}{d^4x d^4p} &= \frac{N_c \alpha_{\text{em}}}{2\pi^5} \sum_f \frac{q_f^2 |eB| |q_f B| m_f^2 m_l^2}{p_{\parallel}^4 p_{\perp}^4} \Theta(p_{\parallel}^2 - 4\tilde{m}^2) \left(1 - \frac{4m_l^2}{p_{\parallel}^2}\right)^{-1/2} \left(1 - \frac{4m_f^2}{p_{\parallel}^2}\right)^{-1/2} \\ &\times e^{-p_{\perp}^2/2|q_f B|} n_B(\omega) [1 - n_F(p_+^s) - n_F(p_-^s)], \end{aligned} \quad (46)$$

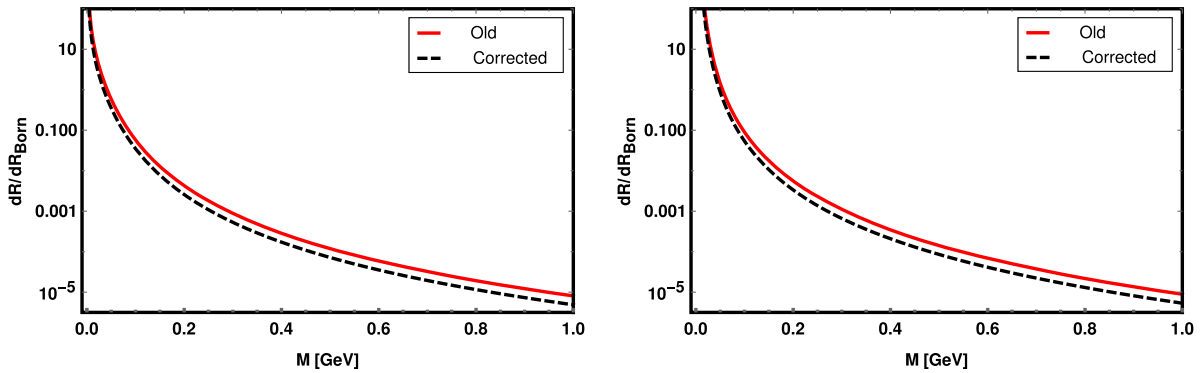


FIG. 7. Figure 7 in the article [1] is replotted here, with the corrected rate expressions drawn as dashed black lines.

respectively. With these corrected expressions, Fig. 7 of Ref. [1], the only figure affected, is redrawn here (see Fig. 7). It is observed that in the low invariant-mass region, where the rate is enhanced relative to the Born rate, the correction does not lead to significant changes. At higher invariant masses, where the magnetized rate is strongly suppressed relative to the Born rate, the corrected expressions yield further suppression for both nonzero (left panel) and zero (right panel) external momentum. However, such modifications do not change the conclusion of the original paper.

We thank Xinyang Wang and Igor A. Shovkovy for pointing out this mistake [2]. The correct dilepton rate expression in the lowest Landau level approximation, where only the initial quark pairs are affected by the magnetic field, is also shown in Ref. [3].

- [1] A. Bandyopadhyay, C. A. Islam, and M. G. Mustafa, *Phys. Rev. D* **94**, 114034 (2016).
- [2] X. Wang and I. A. Shovkovy, *Phys. Rev. D* **106**, 036014 (2022).
- [3] A. Das, A. Bandyopadhyay, and C. A. Islam, *Phys. Rev. D* **106**, 056021 (2022).