Erratum: Magnetic dipole transitions of B_c and B_c^* mesons in the relativistic independent quark model **[Phys. Rev. D **96**, 116010 (2017)]**

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An error was detected in our paper while revisiting the calculation leading to the momentum-space projection of the quark orbitals derivable in the relativistic independent quark (RIQ) model. The error was due to a relative sign mistake that entered into the calculation of the lower components of the quark orbitals for the 2s and 3s meson states. With this relative sign mistake, our calculation led to model expressions for momentum probability amplitude $G_b(\vec{p}_b)$ and $\tilde{G}_c(\vec{p}_c)$ corresponding to orbitally excited meson states ($n = 2, 3; l = 0$) which were shown in Eqs. (A7) and (A9) in the Appendix of our published paper. Taking into account the correct relative sign, the corresponding expressions are found in the following form:

For the excited meson state ($n = 2, l = 0$):

$$\begin{aligned} G_b(\vec{p}_b) &= \frac{i\pi\mathcal{N}_b}{2\alpha_b} \sqrt{\frac{(E_{p_b} + m_b)}{E_{p_b}}} \frac{(E_{p_b} + E_b)}{(E_b + m_b)} \left(\frac{\vec{p}_b^2}{2\alpha_b} - \frac{3}{2} \right) \exp\left(-\frac{\vec{p}_b^2}{4\alpha_b}\right) \\ \tilde{G}_c(\vec{p}_c) &= \frac{i\pi\mathcal{N}_c}{2\alpha_c} \sqrt{\frac{(E_{p_c} + m_c)}{E_{p_c}}} \frac{(E_{p_c} + E_c)}{(E_c + m_c)} \left(\frac{\vec{p}_c^2}{2\alpha_c} - \frac{3}{2} \right) \exp\left(-\frac{\vec{p}_c^2}{4\alpha_c}\right). \end{aligned} \quad (\text{A7})$$

For the excited meson state ($n = 3, l = 0$):

$$\begin{aligned} G_b(\vec{p}_b) &= \frac{i\pi\mathcal{N}_b}{2\alpha_b} \sqrt{\frac{(E_{p_b} + m_b)}{E_{p_b}}} \frac{(E_{p_b} + E_b)}{(E_b + m_b)} \left(\frac{\vec{p}_b^4}{8\alpha_b^2} - \frac{5\vec{p}_b^2}{4\alpha_b} + \frac{15}{8} \right) \exp\left(-\frac{\vec{p}_b^2}{4\alpha_b}\right) \\ \tilde{G}_c(\vec{p}_c) &= \frac{i\pi\mathcal{N}_c}{2\alpha_c} \sqrt{\frac{(E_{p_c} + m_c)}{E_{p_c}}} \frac{(E_{p_c} + E_c)}{(E_c + m_c)} \left(\frac{\vec{p}_c^4}{8\alpha_c^2} - \frac{5\vec{p}_c^2}{4\alpha_c} + \frac{15}{8} \right) \exp\left(-\frac{\vec{p}_c^2}{4\alpha_c}\right). \end{aligned} \quad (\text{A8})$$

The binding energies of the constituent quark and antiquark for the ground and orbitally excited B_c , B_c^* states can also be obtained by solving respective cubic equations representing appropriate bound state conditions for $n = 1, 2, 3$ and $l = 0$.

Using the expressions for $G_b(\vec{p}_b)$ and $\tilde{G}_c(\vec{p}_c)$ for the meson ground state ($n = 1; l = 0$) and the revised expressions (A7) and (A8) corresponding to the orbitally excited meson states ($n = 2, 3; l = 0$), the coupling constant and decay width for different allowed transitions are evaluated.

The revised Tables I and II provide our predictions for the $1^3S_1 \rightarrow 1^1S_0$ transition as well as for all other allowed transitions involving orbitally excited meson states. Although our predictions for the later category of transitions are found to be different from the previous predicted values as expected, they are consistent with other model predictions. The correction does not affect our conclusions in a qualitative sense.

There is also a typographical error in the header of column 2 in Table I which reads “Transition Energy (MeV)” in the published paper. This has been corrected to “Transition Energy (GeV)” in the revised Table I.

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TABLE I. Predicted transition energy, coupling constant, and decay width in the RIQ model.

Transitions	Transition energy (GeV)	Coupling constant (GeV^{-1})	Decay width (KeV)
$1^3S_1 \rightarrow 1^1S_0$	0.04344	0.3392	0.023
$2^3S_1 \rightarrow 2^1S_0$	0.06806	0.29858	0.0683
$3^3S_1 \rightarrow 3^1S_0$	0.12285	0.24956	0.2809
$2^3S_1 \rightarrow 1^1S_0$	0.61589	0.0288	0.4715
$3^3S_1 \rightarrow 2^1S_0$	0.40559	0.0334	0.181
$3^3S_1 \rightarrow 1^1S_0$	0.927079	0.0117	0.2664
$2^1S_0 \rightarrow 1^3S_1$	0.51325	0.0406	1.6267
$3^1S_0 \rightarrow 2^3S_1$	0.22174	0.0631	0.3169
$3^1S_0 \rightarrow 1^3S_1$	0.77978	0.0350	4.2414

TABLE II. Comparison of theoretical predictions on M1 transition rate (KeV).

Transitions	Present work	[1]	[2]	[3]	[4]	[5]	[6]	[7]
$1^3S_1 \rightarrow 1^1S_0$	0.023	0.08	0.017	0.033	0.06	0.135	0.059	...
$2^3S_1 \rightarrow 2^1S_0$	0.0683	0.01	...	0.017	0.01	0.029	0.012	...
$3^3S_1 \rightarrow 3^1S_0$	0.2809	0.003	...	...	...	...	...	...
$2^3S_1 \rightarrow 1^1S_0$	0.4715	0.6	0.28	0.428	0.098	0.123	0.122	...
$3^3S_1 \rightarrow 2^1S_0$	0.181	0.2	...	...	...	...	...	...
$3^3S_1 \rightarrow 1^1S_0$	0.2664	0.6	0.37	...	...	...	...	...
$2^1S_0 \rightarrow 1^3S_1$	1.6267	0.3	0.38	0.488	0.096	0.093	0.139	1
$3^1S_0 \rightarrow 2^3S_1$	0.3169	0.06	0.25	...	...	...	...	...
$3^1S_0 \rightarrow 1^3S_1$	4.2414	4.2	0.074	...	...	...	...	...

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