Erratum: Gluonic transversity from lattice QCD [Phys. Rev. D **94**, 014507 (2016)]

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On further investigation, it was discovered that the decomposition of the parton distribution functions of the spin-independent gluon operator in Eq. (37) of the main paper is incorrect. This lead to a number of errors, which are corrected here.

Replacing Eq. (32) of the main paper, the gluonic analogue of the Soffer bound, for spin-1 particles, is [1–4]

$$|\delta G(x)| \leq \frac{1}{2} \left(f_1(x) + \frac{1}{2} f_{1LL}(x) + g_1(x) \right), \quad (1)$$

where $\delta G(x)$ is the gluonic transversity distribution defined in Eq. (14) of the main paper, $f_1(x)$ and $f_{1LL}(x)$ are the spin-independent gluon distributions, and $g_1(x)$ is the spin-dependent gluon distribution. The notation here for f_1 , f_{1LL} , and g_1 is the same as in Refs. [3,4], while $\delta G(x)$ is named h_{1TT} in those works.

Replacing Eq. (36) of the main paper, the analogue of the Soffer bound for the leading Mellin moments of gluon distributions is [4]

$$|A_2| \leq \frac{1}{24} (5B_{2,1} - 6B_{2,2}), \quad (2)$$

where A_2 is the reduced matrix element defined in Eq. (10) of the main paper and $B_{2,1}$ and $B_{2,2}$ are linear combinations of the moments of the structure functions f_1 and f_{1LL} in Eq. (1), defined through

$$\langle pE' | \bar{\mathcal{O}}_{\mu_1\mu_2} | pE \rangle = S[M^2 E'_{\mu_1} E_{\mu_2}] B_{2,1}(\mu^2) + S[(E \cdot E') p_{\mu_1} p_{\mu_2}] B_{2,2}(\mu^2). \quad (3)$$

This equation replaces Eq. (37) from the main paper.

Several figures must also be replaced. Figures 1 and 2 below replace Figs. 6 and 8 from the main paper. The conclusions of the analysis, including that the gluon Soffer bound in the spin-1 ϕ meson is saturated to approximately 80%–100%, do not change.

FIG. 1. Reduced matrix elements $B_{2,1}$ and $B_{2,2}$ extracted from ratios of two- and three-point functions as described in Secs. III C and IV of the main text. Results in sections I and II of the figure are determined using vectors in the $\tau_1^{(3)}$ and $\tau_3^{(6)}$ representations. Different colors (offset on the horizontal axis for clarity) denote different basis vectors. These results can be compared with those in Fig. 2 with Wilson-flowed gauge fields. The horizontal bands are fits shown to guide the eye.

FIG. 2. Reduced matrix elements $B_{2,1}$ and $B_{2,2}$ extracted from ratios of two- and three-point functions as described in Secs. IIIC and IV of the main text. Wilson flow [5] was applied to the links in the gluon operator as described in the text. Results in sections I and II of the figure are determined using vectors in the $\tau_1^{(3)}$ and $\tau_3^{(6)}$ representations. Different colors (offset on the horizontal axis for clarity) denote different basis vectors. The horizontal band is a fit shown to guide the eye.

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