Known Typos in the "Quantum Chromodynamics at High Energy" by Yu. V. Kovchegov and E. Levin

Preface

Page ix, line 8 from the bottom, "Chapters 6 through 9".

Chapter 1

Eq. (1.47): in the parenthesis, replace $- \to +$, that is $-\tilde{A}^a_\mu \nabla^2_\perp \tilde{A}^{a\,\mu} \to +\tilde{A}^a_\mu \nabla^2_\perp \tilde{A}^{a\,\mu}$.

Eq. (1.49) should read

$$k^\mu = \left(k^+, \frac{\vec{k}^2_\perp + m^2}{k^+}, \vec{k}_\perp \right).$$

Eq. (1.63): $g^2 \to -g^2$.

Page 14, the line above Eq. (1.72), "on Peskin and Schroeder" $\to$ "or Peskin and Schroeder".

Chapter 2

Eq. (2.3): we have neglected m_e compared to E and E' in arriving at this formula.

Eq. (2.9): the right-hand side is missing $\frac{1}{2m}$. This does not propagate.

Page 33, there is also a non-zero leading-order W^{++} component arising from $\gamma^+ \left(\not{k} + \not{q}\right) \gamma^+ \approx k^+ \gamma^+$, etc. One should simply concentrate on W^{ij} component calculated there.

Eq. (2.69): $\vec{k}^2_j \to \vec{k}^2_{j\perp}$.

Unnumbered formula between Eqs. (2.69) and (2.70) should read (typesetters error)

$$\epsilon^\mu_\lambda (k' - k) = \left(0, \frac{2\,\vec{\epsilon}^\lambda_\perp \cdot (\vec{k}'_\perp - \vec{k}_\perp)}{k'^+ - k^+}, \vec{\epsilon}^\lambda_\perp \right).$$

Chapter 3

Page 76, last line of Sec. 3.1, $\sigma_{tot} \sim s^{\text{const}\,\alpha_s}$.

Page 87, 3rd line below Eq. (3.39), drop a comma in $|\vec{x}_{1\perp}|$.

Page 97, first line below Eq. (3.70), "clockwise" $\to$ "counter-clockwise".

Eq. (3.127), $1/(\alpha_P - 1) \to -1/(\alpha_P - 1)$.

Chapter 4

Eqs. (4.13), (4.19) and (4.20) should have an overall minus sign on their right-hand sides.

Eqs. (4.40) and (4.42) should not have $(2\pi)^2$ in the denominator (does not propagate).

Eq. (4.75) should include $\sum_{\sigma,\sigma'} |\Psi^{(0)}_{\sigma,\sigma'}(\vec{x}_{10}, z_1)|^2\big|_{O(\alpha_s^0)}$ multiplying the right-hand side.

The first two terms on the right-hand side of Eq. (4.87) should have pluses instead of minuses in their arguments, that is, one should have $n\left(\vec{x}_{12}, \vec{x}_{1'0'}, \vec{b} + \frac{\vec{x}_{20}}{2}, Y\right) + n\left(\vec{x}_{20}, \vec{x}_{1'0'}, \vec{b} + \frac{\vec{x}_{21}}{2}, Y\right)$ in that equation.

Page 159, line 2 above Eq. (4.104): $d^2\rho = d\rho\, d\rho^*/2$. (This does not propagate.)

Eq. (4.110): $E^{m,\mu} \to E^{m,\mu *}$.

Eq. (4.135): $\vec{r}_\perp \to \vec{x}_\perp$ (or vice versa) in two places.

Eqs. (4.169) and (4.170): $x_\perp \to x_{10}$.

Page 177, replace $\xi^2 \to \xi^2/2$ in Eqs. (4.172) and (4.173).

In Eq. (4.200), replace $\infty \to \propto$ (typesetters error).

Page 190, Fig. 4.36, first diagram after the equal sign, $l_i \to l_j$ for the right l_i
Same page, Eqs. (4.207) and (4.208), the Green function is normalized differently from the Green function in Eq. (3.58)

Page 196, problem 4.2, replace $x^- \to x^+$ everywhere in line 5 of the problem.

Page 196, problem 4.5 (a), the initial condition should be $Z(Y = 0, u) = u$.

Chapter 5

Replace $g \to -g$ in Eqs. (5.9), (5.10), (5.11), (5.12), (5.100), (5.102). Replace $g^2 \to -g^2$ in Eqs. (5.17), (5.35), (5.37). Disregard the footnote on page 227 (or read it before Eq. (5.9)). No physical observable calculated in Chapter 5 is affected.

Eq. (5.56) should have an extra 2 in the denominator on its right-hand side.

Page 214, line 3 after Eq. (5.56): "xG is now IR finite"; page 214, line 4 after Eq. (5.56): "resulting in a finite net number of IR gluons".

Fig. 5.7: the dashed $\sim 1/k_T$ line should approach the large-k_T asymptotics of the solid line from below.

Page 223, 3rd line below Eq. (5.90), "physic" $\to$ "physics" (typesetters error).

Chapter 7

Eq. (7.2) should include ϕ_0 on its right-hand side, that is, the right-hand side should read $\frac{e^{ikr}}{r}\,\phi_0\,f(\vec{q})$. The factor of ϕ_0 on the right-hand side of Eq. (7.3) should be dropped.

Eq. (7.22a): multiply the right-hand side by N_c.

Eq. (7.22b): multiply the right-hand side by $N_c^2 \int d^2b\, T^2(\vec{b}_\perp)/A^2$.

Chapter 8

Note that the cutoff Λ in Eq. (8.5) is assumed to be different (smaller) than the cutoff $\Lambda \approx \Lambda_{QCD}$ used in the discussion in the two paragraphs following Eq. (8.5).

The exponential in Eq. (8.11) should read $e^{-i\vec{k}_\perp\cdot\vec{x}_{21}-i\vec{q}_\perp\cdot\vec{x}_{13}}$. In the integration measure, replace $d^2x_0 \to d^2x_1$.

Eq. (8.15): $U^{bc}_{\vec{x}_{2'\perp}} \to U^{\dagger\,bc}_{\vec{x}_{2'\perp}}$.

Eq. (8.16): interchange $a \leftrightarrow b$.

Appendix A

Eq. (A.21): add $dx_{02}\,dx_{12}$ on the right-hand side.

Appendix B

Page 313, the second equation in line 9 (line 4 of the first full paragraph) should read $A + \bar{C} \to \bar{B} + D$.

The contours C_1 and C_2 in Fig. (B.2) should run counterclockwise.

Replace $s \to s'$ on the right-hand side of Eq. (B.12); replace $u \to u'$ on the right-hand side of Eq. (B.13).