The two formulae implemented for the red and blue curves of figure 8 of the note (up to an irrelevant overall normalization factor K that is the same for both) are

$$\frac{dN^{GLV}}{dx_+}(x_+) = K\frac{1}{x_+}\int_0^{\sqrt{3\mu E}} qdq\frac{1}{(4x_+E\hbar c/L)^2+q^4} \int_0^{2x_+(1-x_+)E} kdk\frac{k^2-q^2+\mu^2}{\left[(k-q)^2+\mu^2\right]^{3/2}\left[(k+q)^2+\mu^2\right]^{3/2}}; \tag{1}$$

$$\frac{dN^{ASW}}{dx_E}(x_E) = K\frac{1}{x_E}\int_0^{\sqrt{3\mu E}} qdq\frac{1}{(4x_EE\hbar c/L)^2+q^4} \int_0^{x_EE} kdk\frac{k^2-q^2+\mu^2}{\left[(k-q)^2+\mu^2\right]^{3/2}\left[(k+q)^2+\mu^2\right]^{3/2}}. \tag{2}$$

First note that the two equations are identical in form. Also, in the eikonal limit $k_\perp \ll xE \Rightarrow x_+ \approx x_E$ and the integrands are identical; it is only in the k cutoff, where $k_\perp = xE$, that there is a difference in the formulae.

If I alter Eq. (1) such that the upper bound of the k integration does not include the $1-x_+$ piece (specifically

$$\frac{dN^{GLV}}{dx_+}(x_+) = K\frac{1}{x_+}\int_0^{\sqrt{3\mu E}} qdq\frac{1}{(4x_+E\hbar c/L)^2+q^4} \int_0^{x_+E} kdk\frac{k^2-q^2+\mu^2}{\left[(k-q)^2+\mu^2\right]^{3/2}\left[(k+q)^2+\mu^2\right]^{3/2}} \tag{3}$$

) and then plot this and Eq. (2) on the same graph, I get Fig. 1.

One can exploit the chain rule and the known inverses $x_+(x_E)$ and $x_E(x_+)$ to plot the two implementations on the same footing. Specifically

$$\frac{dN^{GLV}}{dx_E}(x_E) = \frac{dx_+}{dx_E}\frac{dN^{GLV}}{dx_+}\big(x_+(x_E)\big) \tag{4}$$

$$\frac{dN^{ASW}}{dx_+}(x_+) = \frac{dx_E}{dx_+}\frac{dN^{GLV}}{dx_E}\big(x_E(x_+)\big). \tag{5}$$

Fig. 2 shows $dN^{GLV}/dx_E(x_E)$ and $dN^{ASW}/dx_E(x_E)$. $dN^{GLV}/dx_+(x_+)$ and $dN^{ASW}/dx_+(x_+)$ are shown in Fig. 3. Note that for the previous two equations, the upper bound of the k integration is changed to reflect the new coordinates: for Eq. (4) the upper bound is x_EE; for Eq. (5), $2x_+E$.

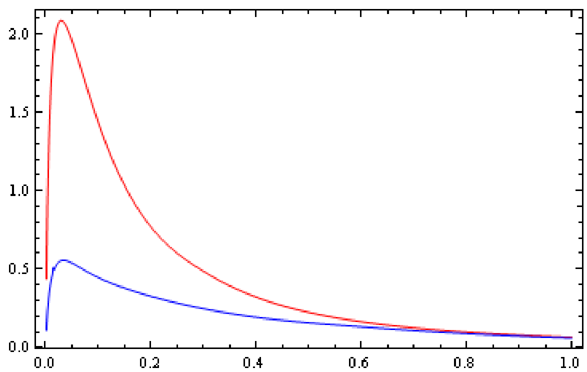

Figure 1: Eq. (3) in red and Eq. (2) in blue. Note that the “x” axis is not well defined; these are plots of $dN^{GLV}/dx_+(x_+)$ and $dN^{ASW}/dx_E(x_E)$ on the same graph. Other than the tail of the red curve (where $1 - x_+$ effects kick in) and an overall normalization factor, this is the same as Fig. 8 from the Cole Horowitz note.

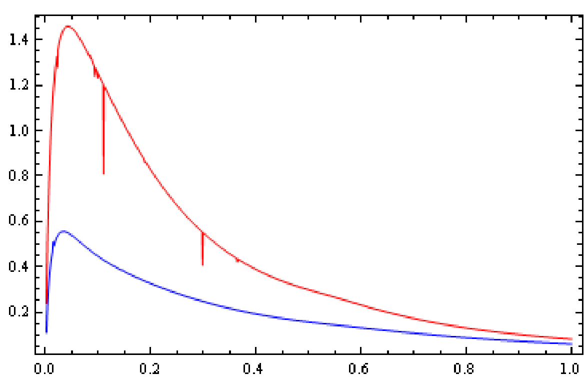

Figure 2: Plot of $dN^{GLV}/dx_E(x_E)$, Eq. (4), in red and $dN^{ASW}/dx_E(x_E)$, Eq. (2), in blue.

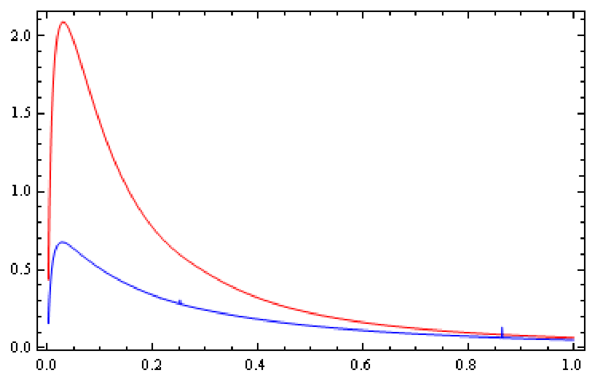

Figure 3: Plot of $dN^{GLV}/dx_+(x_+)$, Eq. (3), in red and $dN^{ASW}/dx_+(x_+)$, Eq. (5), in blue.