

Processes:

$$\begin{aligned}\gamma(k) + N(p) &\rightarrow \pi^+(q_+) + \pi^-(q_-) + N(p'); \\ \gamma(k) + N(p) &\rightarrow \mu^+(q_+) + \mu^-(q_-) + N(p')\end{aligned}\quad (1)$$

Cross section (photon exchange):

$$\frac{d\sigma}{dt} = \frac{2\alpha}{\pi} \sigma_{\gamma\gamma}(M) \frac{\vec{q}^2}{Q^4} \frac{dM}{M} \left(F_1^2(t) + \frac{\vec{q}^2}{4m_N^2} F_2^2(t) \right) \quad (2)$$

$-t = Q^2 = \vec{q}^2 + \frac{M^4}{4k^2}$; $M^2 = (q_+ + q_-)^2$ - pair invariant mass; $dt = d\vec{q}^2 = \frac{kk'}{\pi} d\Omega$; \vec{q}_-, \vec{q}_+ are the two-dimensional transverse momenta of pions(muons).
 $\vec{q} = \vec{q}_- + \vec{q}_+$ - transverse part of the transfer momentum

This expression is suitable for the photoproduction of any pairs (e^+e^-), ($\mu^+\mu^-$), ($\pi^+\pi^-$) etc. The difference is in the total cross section $\sigma(M^2)$.

For $\gamma\gamma \rightarrow \pi^+\pi^-$:

$$\sigma(\gamma\gamma \rightarrow \pi^+\pi^-) = \frac{2\pi\alpha^2}{M^2} \left[\sqrt{1 - \frac{4m_\pi^2}{M^2}} \left(1 + \frac{4m_\pi^2}{M^2} \right) - \frac{4m_\pi^2}{M^2} \left(2 - \frac{4m_\pi^2}{M^2} \right) \log \left(\frac{M}{2m_\pi} + \sqrt{\frac{M^2}{4m_\pi^2} - 1} \right) \right] \quad (3)$$

At large M^2 : $\sigma(\gamma\gamma \rightarrow \pi^+\pi^-) = \frac{2\pi\alpha^2}{M^2}$ For $\gamma\gamma \rightarrow \mu^+\mu^-$:

$$\sigma(\gamma\gamma \rightarrow \mu^+\mu^-) = \frac{4\pi\alpha^2}{M^2} \left[2 \left(1 + \frac{4m_\mu^2}{M^2} - \frac{8m_\mu^4}{M^4} \right) \log \left(\frac{M}{2m_\mu} + \sqrt{\frac{M^2}{4m_\mu^2} - 1} \right) - \left(1 + \frac{4m_\mu^2}{M^2} \right) \sqrt{1 - \frac{4m_\mu^2}{M^2}} \right] \quad (4)$$

At large M^2 : $\sigma(\gamma\gamma \rightarrow \mu^+\mu^-) = \frac{4\pi\alpha^2}{M^2} \left[2 \log \frac{M}{m_\mu} - 1 \right]$

The general expression (2) coincides with similar one (6) from L.Stodolsky, Phys.Rev. Lett. 26,404 (1971) and expression (5.49) from review: V.Budnev et al.,Phys. Reports 15,181 (1975).

The expressions (3),(4) for $\sigma_{\gamma\gamma}(M^2)$ are from the Appendix E of this work. I calculated the relevant Feynman diagrams and obtained the expression (2) myself, but unfortunately (for me) it seems that it is known for many years!!! From the other hand for our task it is a good news as now we have a general and correct expression (2)(obtained by different techniques) allowing us to express the differential cross section in Primakoff region through the total cross section of pair production in $\gamma\gamma$ collisions.