

$$(5.25) \quad \tilde{\Delta}^{\mu\nu}(k) = \frac{-\frac{1}{2} \frac{\eta^{\mu\nu} k^2}{k^2 + (\frac{1}{2}k)^2}} + \frac{g^{\mu\nu} + \frac{\eta^{\mu\nu} k^2}{k^2} - \frac{\eta^{\mu\nu} k^2}{k^2 - i\epsilon}}{k^2 - i\epsilon}$$

$$\frac{1}{k^2} \rightarrow \frac{(\frac{1}{2}k)^2}{(k^2 + (\frac{1}{2}k)^2)^{1/2}}$$

$$\tilde{\Delta}^{\mu\nu}(k) = \frac{-\frac{1}{2} \frac{\eta^{\mu\nu} k^2}{k^2 + (\frac{1}{2}k)^2}} + \frac{g^{\mu\nu} + \frac{\eta^{\mu\nu} k^2}{k^2}}{k^2 - i\epsilon} - \frac{(\frac{1}{2}k)^2 \frac{\eta^{\mu\nu} k^2}{k^2}}{k^2 + (\frac{1}{2}k)^2 - i\epsilon}$$

$$\frac{(-\frac{1}{2} \frac{\eta^{\mu\nu} k^2}{k^2 + (\frac{1}{2}k)^2} + (g^{\mu\nu} + \frac{\eta^{\mu\nu} k^2}{k^2}) \frac{(\frac{1}{2}k)^2}{k^2 + (\frac{1}{2}k)^2})}{(k^2 + (\frac{1}{2}k)^2) (k^2 - i\epsilon)}$$

$$\tilde{\Delta}^{\mu\nu}(k) = \frac{-\frac{1}{2} \frac{\eta^{\mu\nu} k^2}{k^2 + (\frac{1}{2}k)^2} + (\frac{1}{2}k)^2 \frac{g^{\mu\nu}}{(k^2 + (\frac{1}{2}k)^2)}}{(k^2 + (\frac{1}{2}k)^2) (k^2 - i\epsilon)}$$