

$$\frac{2i}{\lambda^2} \mathcal{M}(p, \sigma) = \int_{\mathbb{R}^4} \frac{d^4 k}{(2\pi)^4} \frac{e^{-H \left[ \sigma^2 (k^2 - m^2)^2 \right]}}{k^2 - m^2 + i\epsilon} \frac{e^{-H \left[ \sigma^2 ((k-p)^2 - m^2)^2 \right]}}{(k-p)^2 - m^2 + i\epsilon} = \int_{\mathbb{R}^3} \frac{d^3 k}{(2\pi)^4} \int_{\mathbb{R}} dk^0 f(k) \times f(p^0 - k^0)$$