

$$\begin{aligned}
G &= \int_{-\infty}^{\infty} \left(\prod_{l=1}^L \frac{d^D k_l}{i\pi^{\frac{D}{2}}} \right) \prod_{j=1}^N \frac{1}{(q_j^2 - m_j^2 + i\delta)^{\nu_j}} \\
&= \int_0^1 \prod_{j=1}^{N-1} dx_j x_j^{\nu_j-1} \frac{U^{\nu-(L+1)D/2}}{F^{\nu-LD/2}} = \int_0^1 \prod_{j=1}^{N-1} dx_j I(\overrightarrow{x})
\end{aligned}$$