

$$\begin{aligned}
\langle 0 | [\phi^\dagger(x), \phi(y)] | 0 \rangle &= \int \frac{d^3p}{(2\pi)^3} \frac{1}{2E_{\vec{p}}} \left(e^{-ip_\mu(x-y)^\mu} - e^{ip_\mu(x-y)^\mu} \right) \Big|_{p_0=E_{\vec{p}}} \\
&= \int \frac{d^3p}{(2\pi)^3} \frac{1}{2E_{\vec{p}}} \left(e^{-ip_\mu(x-y)^\mu} \Big|_{p_0=E_{\vec{p}}} - e^{-ip_\mu(x-y)^\mu} \Big|_{p_0=-E_{\vec{p}}} \right) \quad (3)
\end{aligned}$$