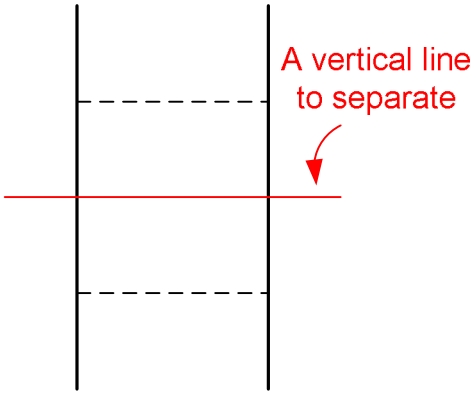
Reducible and irreducible Feynman diagrams

1. Reducible diagram

The diagram can be separated into an independent diagram. In other words, by drawing a vertical line, if it does not intersect the interaction, it is reducible.



The first expanded term of Lippmann-Schwinger equation corresponds to the diagram.

$$T(q,q)=V(q,q)+\int d^3kV(q,k)\frac{1}{e}T(k,q) \quad \Rightarrow \quad \int d^3kV(q,k)\frac{1}{e}T(k,q)$$

2. Irreducible diagram

The diagram cannot be separated into an independent physical diagram as shown.