

$$\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Gamma_{pp}^s(P, P', Q) \\
\leftarrow \bullet \quad \bullet \leftarrow \\
-P \quad -P'
\end{array}
=
\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Lambda_{pp}^s \\
\leftarrow \bullet \quad \bullet \leftarrow \\
-P \quad -P'
\end{array}
+$$

$$\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Gamma_{ph}^m(P, P', Q) \\
\leftarrow \bullet \quad \bullet \leftarrow \\
P \quad P'
\end{array}
=
\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Lambda_{ph}^m \\
\leftarrow \bullet \quad \bullet \leftarrow \\
P \quad P'
\end{array}
-$$

$$\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Gamma_{ph}^d \\
\downarrow \bullet \quad \bullet \downarrow \\
\chi_{ph}^d(\tilde{P}, \tilde{P}', \tilde{Q}) \\
\uparrow \bullet \quad \bullet \uparrow \\
\Gamma_{ph}^d \\
\bullet \quad \bullet \\
\swarrow \quad \searrow \\
-P \quad -P'
\end{array}
-
\frac{3}{2}
\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Gamma_{ph}^m \\
\downarrow \bullet \quad \bullet \downarrow \\
\chi_{ph}^m(\tilde{P}, \tilde{P}', \tilde{Q}) \\
\uparrow \bullet \quad \bullet \uparrow \\
\Gamma_{ph}^m \\
\bullet \quad \bullet \\
\swarrow \quad \searrow \\
-P \quad -P'
\end{array}$$

$\tilde{Q} = P - P'$

$$\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Gamma_{ph}^d \\
\downarrow \bullet \quad \bullet \downarrow \\
\chi_{ph}^d(\tilde{P}, \tilde{P}', \tilde{Q}) \\
\uparrow \bullet \quad \bullet \uparrow \\
\Gamma_{ph}^d \\
\bullet \quad \bullet \\
\swarrow \quad \searrow \\
P \quad P'
\end{array}
+
\frac{1}{2}
\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Gamma_{ph}^m \\
\downarrow \bullet \quad \bullet \downarrow \\
\chi_{ph}^m(\tilde{P}, \tilde{P}', \tilde{Q}) \\
\uparrow \bullet \quad \bullet \uparrow \\
\Gamma_{ph}^m \\
\bullet \quad \bullet \\
\swarrow \quad \searrow \\
P \quad P'
\end{array}$$

$\tilde{Q} = P - P'$

$$+ \frac{1}{2}
\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Gamma_{ph}^d \quad \chi_{ph}^d(\bar{P}, \bar{P}', \bar{Q}) \quad \Gamma_{ph}^d \\
\bullet \quad \bullet \quad \bullet \\
\swarrow \quad \searrow \\
-P \quad -P'
\end{array}$$

$$- \frac{1}{2}
\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Gamma_{pp}^s \quad \chi_{pp}^s(\bar{P}, \bar{P}', \bar{Q}) \quad \Gamma_{pp}^s \\
\bullet \quad \bullet \quad \bullet \\
\swarrow \quad \searrow \\
P \quad P'
\end{array}$$

$$- \frac{3}{2}
\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Gamma_{ph}^m \quad \chi_{ph}^m(\bar{P}, \bar{P}', \bar{Q}) \quad \Gamma_{ph}^m \\
\bullet \quad \bullet \quad \bullet \\
\swarrow \quad \searrow \\
-P \quad -P'
\end{array}$$

$\bar{Q} = P + P' + Q$

$$+ \frac{1}{2}
\begin{array}{c}
P+Q \quad P'+Q \\
\rightarrow \bullet \quad \bullet \rightarrow \\
\Gamma_{pp}^t \quad \chi_{pp}^t(\bar{P}, \bar{P}', \bar{Q}) \quad \Gamma_{pp}^t \\
\bullet \quad \bullet \quad \bullet \\
\swarrow \quad \searrow \\
P \quad P'
\end{array}$$

$\bar{Q} = P + P' + Q$