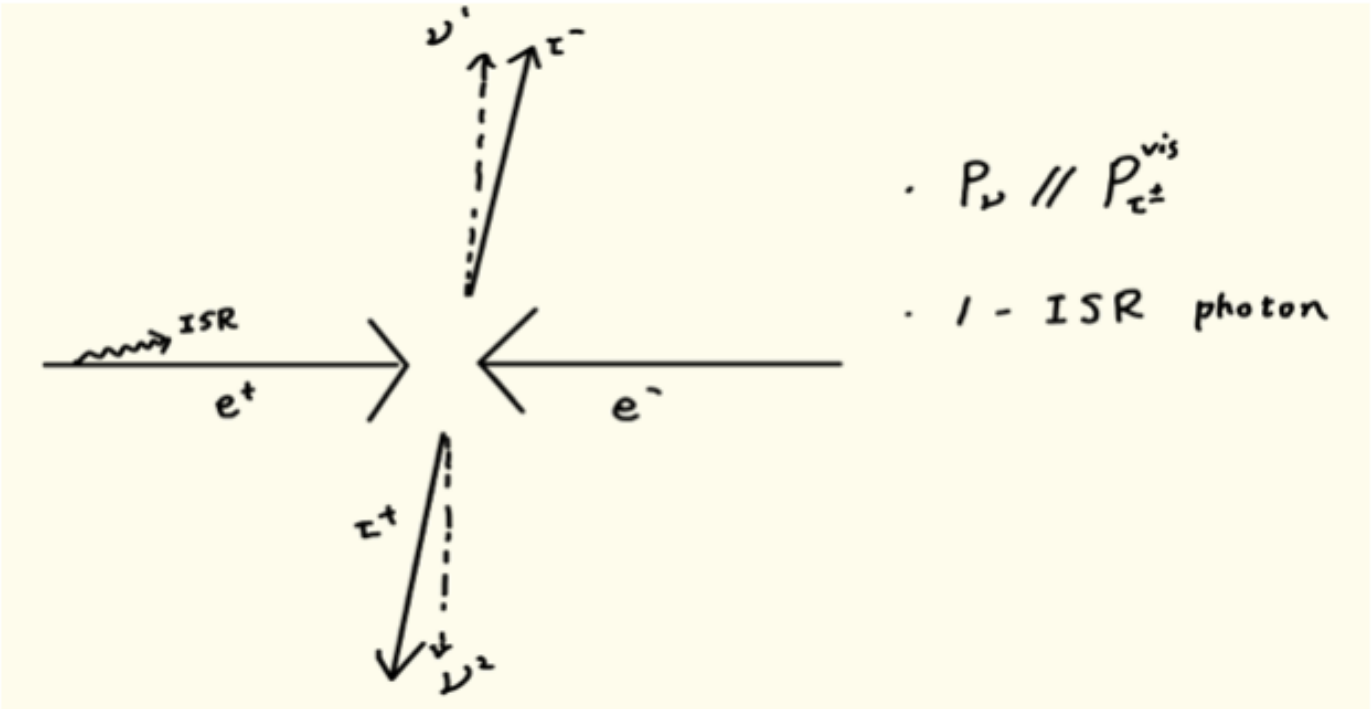
- tau decay mode selection: whole sample$\rightarrow$ only high mass tau-tau
- Polarisation: calculate the neutrino energy

Neutrino energy calculation



$$\Sigma E = E^1_\nu + E^2_\nu + E^{vis}_{\tau^+} + E^{vis}_{\tau^-} + E_{ISR} = 250$$
$$\Sigma P_x = P^{vis}_{\tau^- x} + P^{vis}_{\tau^+ x} + P^1_{\nu x} + P^2_{\nu x} = 0$$
$$\Sigma P_y = P^{vis}_{\tau^- y} + P^{vis}_{\tau^+ y} + P^1_{\nu y} + P^2_{\nu y} = 0$$
$$\Sigma P_z = P^{ISR}_z + P^{vis}_{\tau^+} + P^{vis}_{\tau^-} + P^1_{\nu z} + P^2_{\nu z} = 0$$

Neutrino energy calculation

$$
\begin{aligned}
\Sigma E &= E^1_\nu + E^2_\nu + E^{vis}_{\tau^+} + E^{vis}_{\tau^-} + E_{ISR} = 250 \\
\Sigma P_x &= P^{vis}_{\tau^- x} + P^{vis}_{\tau^+ x} + P^1_{\nu x} + P^2_{\nu x} = 0 \\
\Sigma P_y &= P^{vis}_{\tau^- y} + P^{vis}_{\tau^+ y} + P^1_{\nu y} + P^2_{\nu y} = 0 \\
\Sigma P_z &= P^{ISR}_z + P^{vis}_{\tau^+} + P^{vis}_{\tau^-} + P^1_{\nu z} + P^2_{\nu z} = 0
\end{aligned}
$$

$$
E^1_\nu = \frac{P^{vis}_{\tau^- y} + P^{vis}_{\tau^+ y}}{P^{-x}P^{+y} - P^{-y}P^{+x}} P^{+x} - \frac{P^{vis}_{\tau^- x} + P^{vis}_{\tau^+ x}}{P^{-x}P^{+y} - P^{-y}P^{+x}} P^{+y}
$$

$$
E^2_\nu = \frac{P^{vis}_{\tau^- x} + P^{vis}_{\tau^+ x}}{P^{-x}P^{+y} - P^{-y}P^{+x}} P^{-y} - \frac{P^{vis}_{\tau^- y} + P^{vis}_{\tau^+ y}}{P^{-x}P^{+y} - P^{-y}P^{+x}} P^{-x}
$$

$$
E_{ISR} = 250 - E^1_\nu - E^2_\nu - E^{vis}_{\tau^+} - E^{vis}_{\tau^-}
$$

$$
P^{\pm i} = \frac{P^{vis}_{\tau^\pm i}}{P^{vis}_{\tau^\pm}} \qquad i = (x, y)
$$

$$E_\nu^1 = \frac{P_{\tau^- y}^{vis} + P_{\tau^+ y}^{vis}}{P^{-x}P^{+y} - P^{-y}P^{+x}} P^{+x} - \frac{P_{\tau^- x}^{vis} + P_{\tau^+ x}^{vis}}{P^{-x}P^{+y} - P^{-y}P^{+x}} P^{+y} \quad E_\nu^2 = \frac{P_{\tau^- x}^{vis} + P_{\tau^+ x}^{vis}}{P^{-x}P^{+y} - P^{-y}P^{+x}} P^{-y} - \frac{P_{\tau^- y}^{vis} + P_{\tau^+ y}^{vis}}{P^{-x}P^{+y} - P^{-y}P^{+x}} P^{-x}$$

$$E_{ISR} = 250 - E_\nu^1 - E_\nu^2 - E_{\tau^+}^{vis} - E_{\tau^-}^{vis}$$

$$\Sigma E = E^1_\nu + E^2_\nu + E^{vis}_{\tau^+} + E^{vis}_{\tau^-} + E_{ISR} = 250$$

$$\Sigma P_x = P^{vis}_{\tau^- x} + P^{vis}_{\tau^+ x} + P^1_{\nu x} + P^2_{\nu x} = 0$$

$$\Sigma P_y = P^{vis}_{\tau^- y} + P^{vis}_{\tau^+ y} + P^1_{\nu y} + P^2_{\nu y} = 0$$