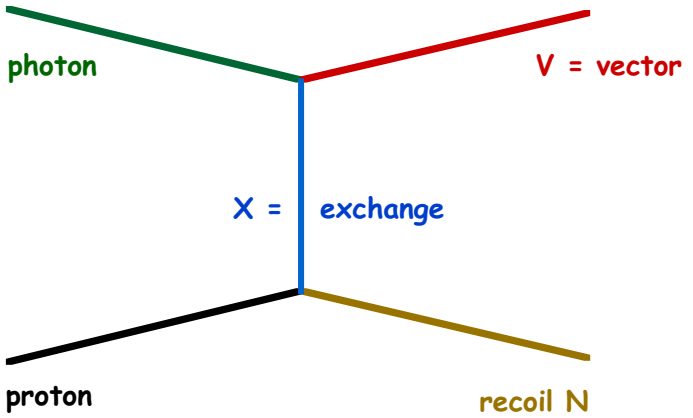
Linear Polarization



Linear polarization is essential in isolating exchanges.
For example, consider separating:

Natural parity exchange
from
Unnatural parity exchange

for example:

0^+ from 0^-

Center of Mass of V

for X, J = 0

photon **X = exchange particle**

$$L = 0,\ 1,\ \text{or}\ 2$$

$$P_V = P_\gamma \cdot P_X \cdot (-1)^L$$

Natural leads to L = 0 or 2
Unnatural leads to L = 1

photon **V = vector**

$|R\rangle$ ⇒ **m = 1** ⇒ $A^N + A^U$

$|L\rangle$ ⇐ **m = -1** ⇐ $A^N - A^U$

$$|x\rangle = \frac{|R\rangle + |L\rangle}{\sqrt{2}} \propto A^N \qquad |y\rangle = -i\frac{|R\rangle - |L\rangle}{\sqrt{2}} \propto A^U$$