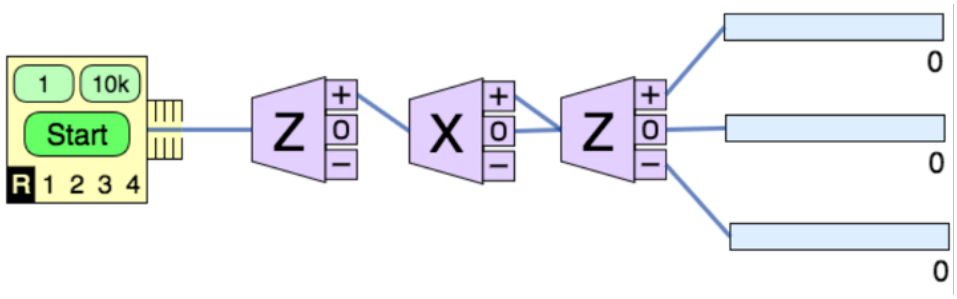
## Spin-1 Interferometer

1. Make an interferometer as shown:




   Make sure the "Coherent" box is checked. Use Random as the initial state.

2. Measure the probabilities that a particle entering the final SG device will be measured to have each of the possible values of spin.

3. Repeat for the seven possible cases where one beam, a pair of beams, or all three beams from the middle SG device are used.

4. Record your results in the experiment part of the worksheet table.

5. Use the projection postulate to calculate and fill in the theory part of the table and compare to the experiment.

Spin 1 Interferometer

| | Theory | | | Experiment | | |
|---|---|---|---|---|---|---|
| Beams | $P(\hbar)$ | $P(0)$ | $P(-\hbar)$ | $P(\hbar)$ | $P(0)$ | $P(-\hbar)$ |
| $\|1\rangle_x$ | | | | | | |
| $\|0\rangle_x$ | | | | | | |
| $\|-1\rangle_x$ | | | | | | |
| $\|1\rangle_x, \|0\rangle_x$ | | | | | | |
| $\|1\rangle_x, \|-1\rangle_x$ | | | | | | |
| $\|0\rangle_x, \|-1\rangle_x$ | | | | | | |
| $\|1\rangle_x, \|0\rangle_x, \|-1\rangle_x$ | | | | | | |