Setup.
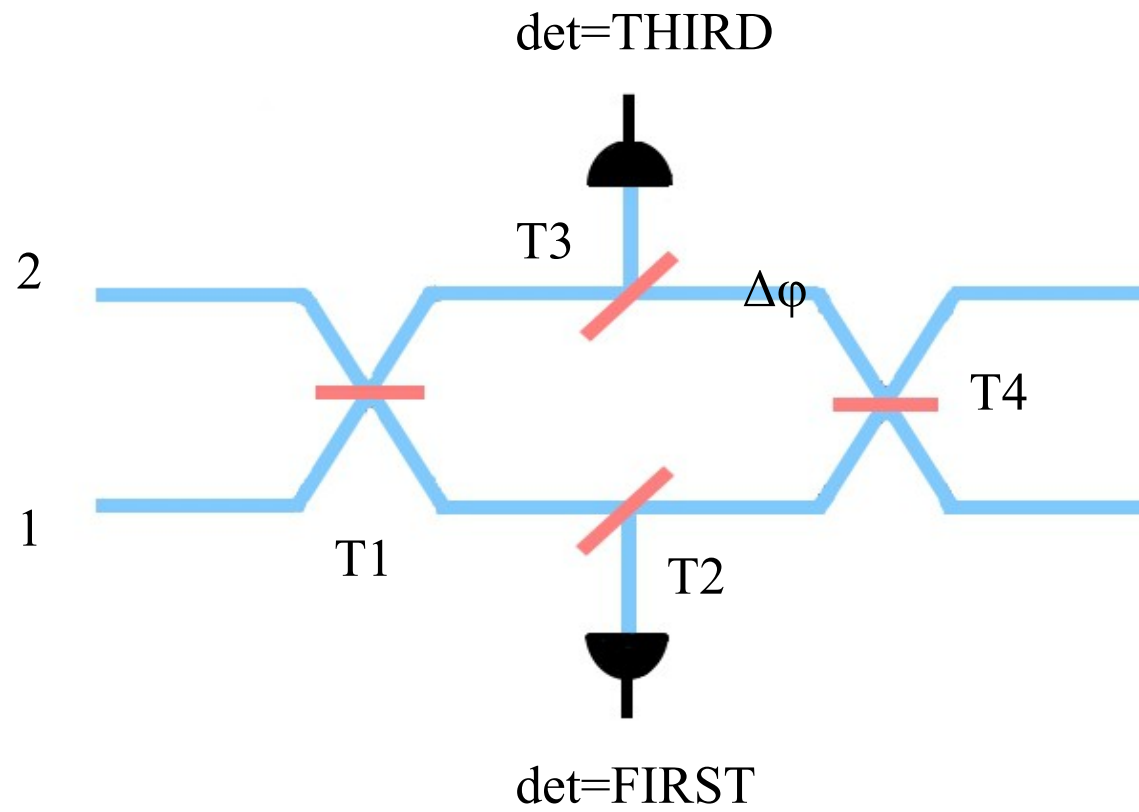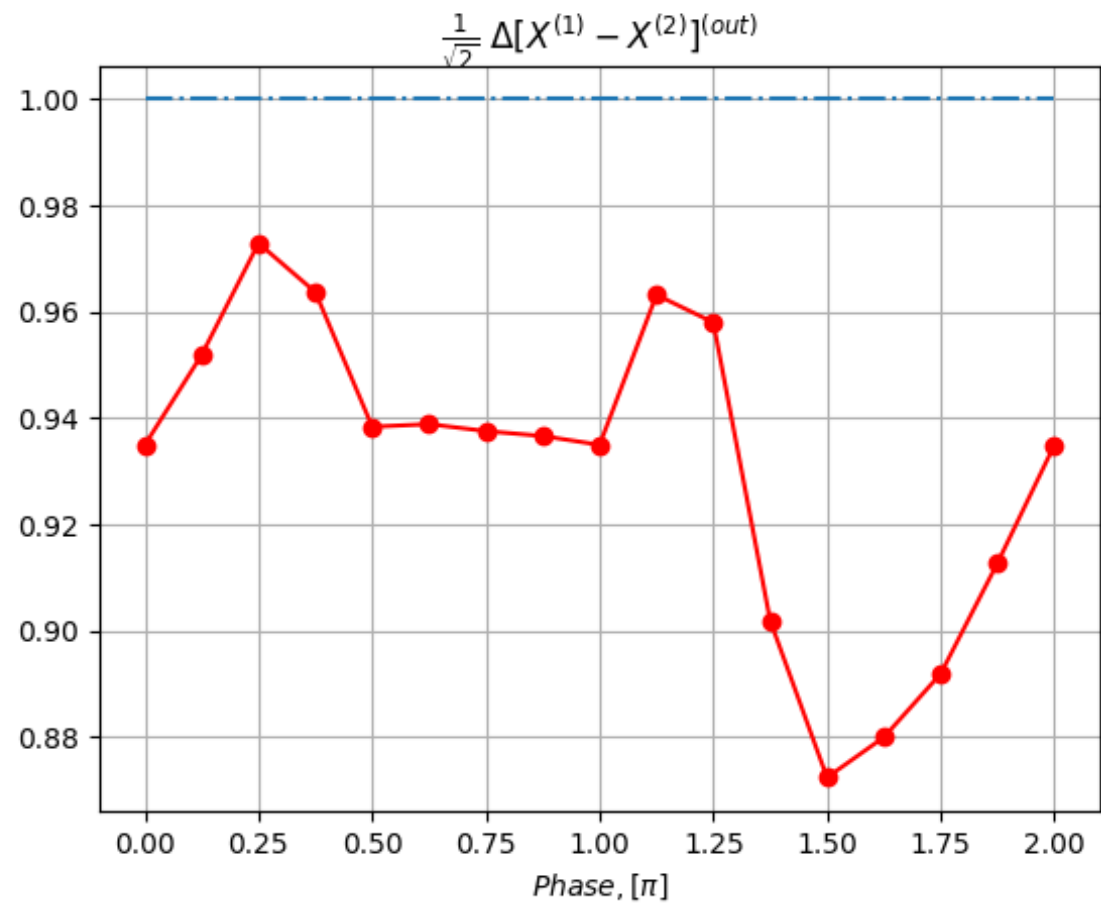
det=THIRD

T3

2

$\Delta\varphi$

T4

1

T1

T2

det=FIRST

1. Single photon goes to the second(top) channel. Coherent state (alpha=1) goes to the first(bottom) channel. **Third and only third** detector clicks.

EPR[X] min values among all BS parameters.

Minimizing set of BS parameters.

$$\frac{1}{\sqrt{2}} \Delta[X^{(1)} - X^{(2)}]^{(out)}$$

Phase, [pi]	T1	T4	T2	T3
0.0	0.3000000000000001	0.19999999999999998	0.10008	0.9999
0.125	0.5000000000000001	0.0	0.10008	0.9999
0.25	0.7000000000000001	1.0	0.9999	0.0001
0.375	0.3000000000000001	1.0	0.0001	0.9999
0.5	0.19999999999999998	1.0	0.0001	0.9999
0.625	0.19999999999999998	0.7999999999999999	0.0001	0.9999
0.75	0.1	0.5000000000000001	0.0001	0.9999
0.875	0.1	0.1	0.0001	0.9999
1.0	0.1	0.0	0.0001	0.9999
1.125	0.3000000000000001	0.0	0.0001	0.9999
1.25	0.7000000000000001	1.0	0.9999	0.20005999999999996
1.375	0.19999999999999998	1.0	0.10008	0.9999
1.5	0.19999999999999998	1.0	0.10008	0.9999
1.625	0.19999999999999998	0.8999999999999999	0.10008	0.9999
1.75	0.19999999999999998	0.7999999999999999	0.10008	0.9999
1.875	0.19999999999999998	0.5000000000000001	0.10008	0.9999
2.0	0.3000000000000001	0.19999999999999998	0.10008	0.9999

EPR[P] min values among all BS parameters.

$$\frac{1}{\sqrt{2}}\,\Delta[P^{(1)} + P^{(2)}]^{(out)}$$
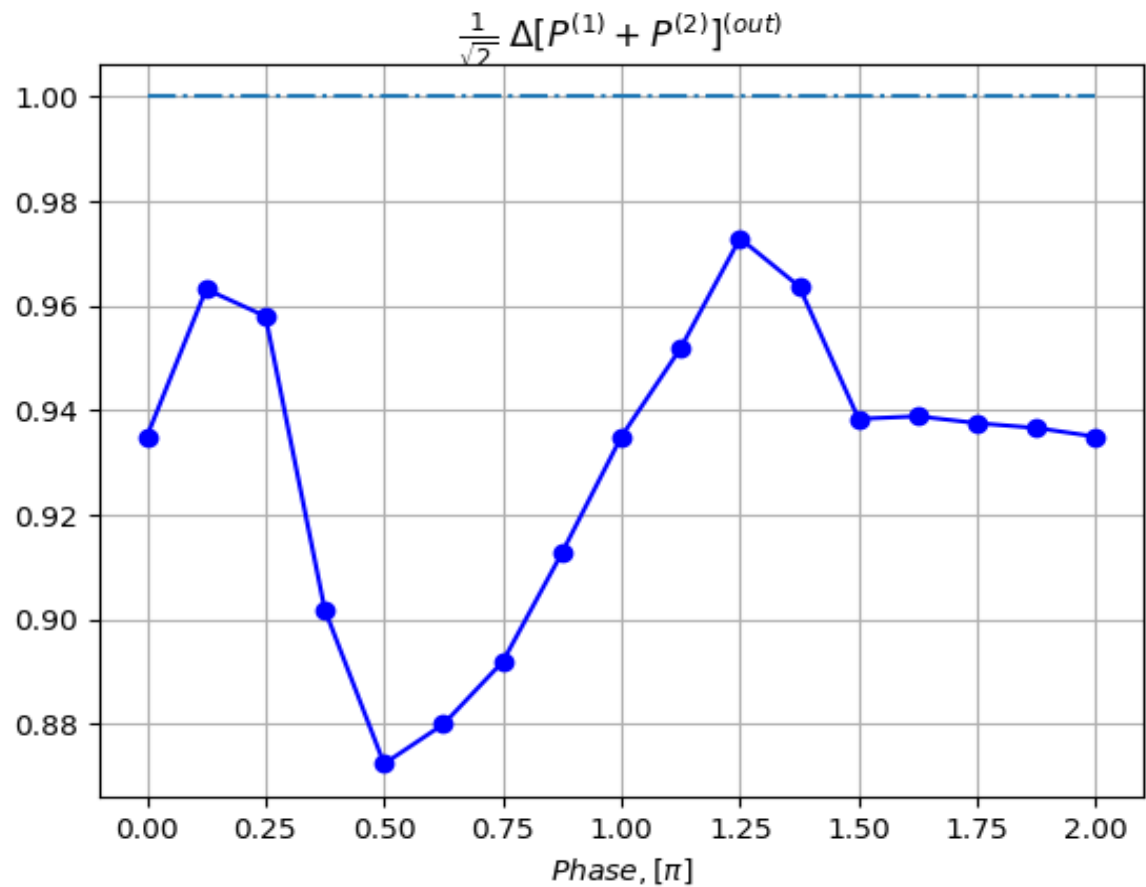
Minimizing set of BS parameters.

Phase, [pi]	T1	T4	T2	T3
0.0	0.1	1.0	0.0001	0.9999
0.125	0.3000000000000001	1.0	0.0001	0.9999
0.25	0.7000000000000001	0.0	0.9999	0.20005999999999996
0.375	0.19999999999999998	0.0	0.10008	0.9999
0.5	0.19999999999999998	0.0	0.10008	0.9999
0.625	0.19999999999999998	0.1	0.10008	0.9999
0.75	0.19999999999999998	0.19999999999999998	0.10008	0.9999
0.875	0.19999999999999998	0.5000000000000001	0.10008	0.9999
1.0	0.3000000000000001	0.7999999999999999	0.10008	0.9999
1.125	0.5000000000000001	1.0	0.10008	0.9999
1.25	0.7000000000000001	0.0	0.9999	0.0001
1.375	0.3000000000000001	0.0	0.0001	0.9999
1.5	0.19999999999999998	0.0	0.0001	0.9999
1.625	0.19999999999999998	0.19999999999999998	0.0001	0.9999
1.75	0.1	0.5000000000000001	0.0001	0.9999
1.875	0.1	0.8999999999999999	0.0001	0.9999
2.0	0.1	1.0	0.0001	0.9999

Probabilities for **only third** detector to click in case of EPR minimizing configuration form the previous slide.
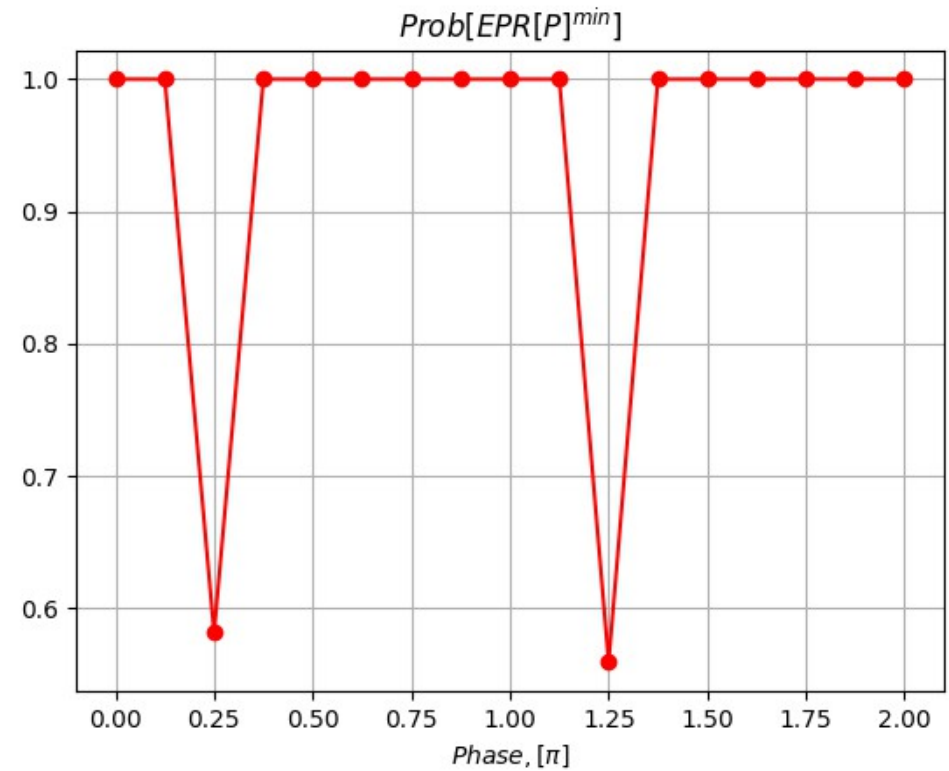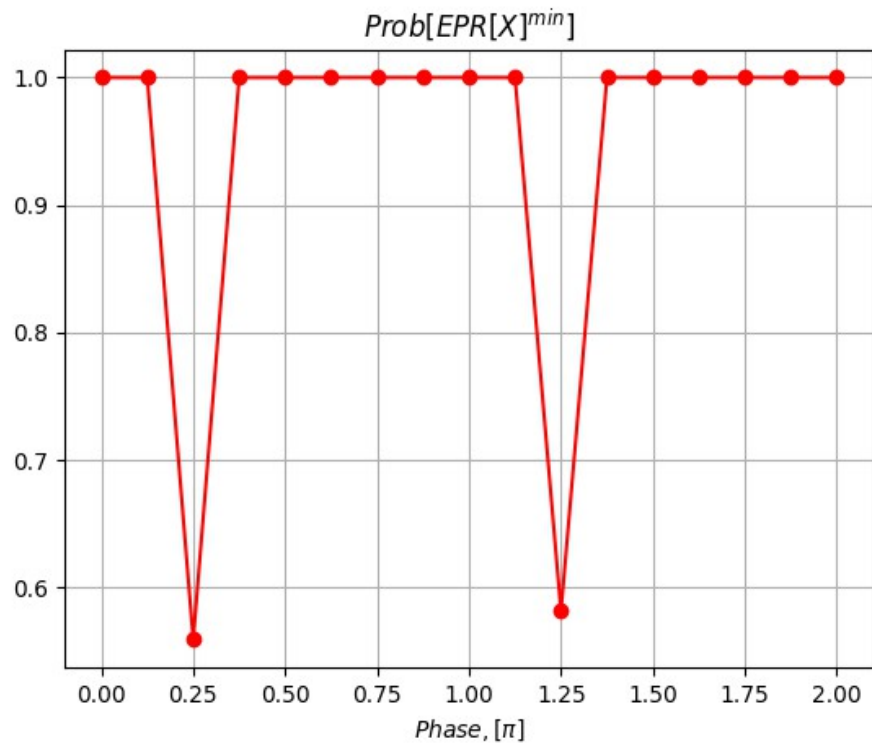
Max squeezing[X] over all parameters.
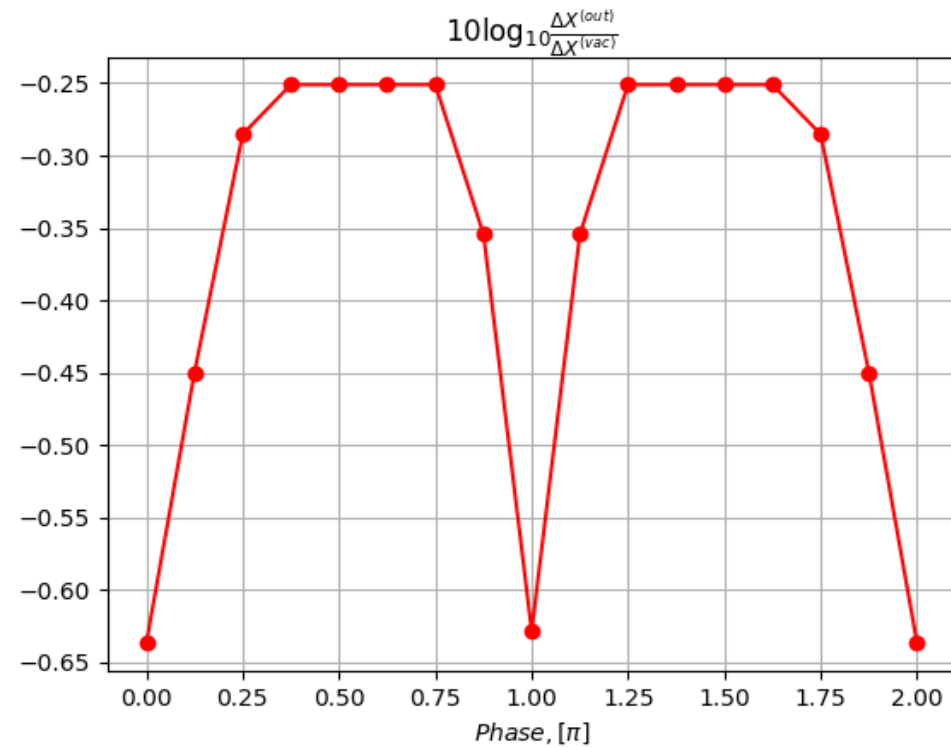
Minimizing set of BS parameters.

Phase, [pi]	T1	T4	T2	T3
0.0	0.3000000000000001	0.19999999999999998	0.10008	0.9999
0.125	0.19999999999999998	0.4	0.10008	0.9999
0.25	0.1	0.8999999999999999	0.10008	0.9999
0.375	0.7000000000000001	1.0	0.9999	0.0001
0.5	0.7000000000000001	1.0	0.9999	0.0001
0.625	0.7000000000000001	1.0	0.9999	0.0001
0.75	0.7000000000000001	1.0	0.9999	0.0001
0.875	0.1	0.0	0.0001	0.9999
1.0	0.1	0.0	0.0001	0.9999
1.125	0.1	0.0	0.0001	0.9999
1.25	0.7000000000000001	1.0	0.9999	0.0001
1.375	0.7000000000000001	1.0	0.9999	0.0001
1.5	0.7000000000000001	1.0	0.9999	0.0001
1.625	0.7000000000000001	1.0	0.9999	0.0001
1.75	0.1	0.8999999999999999	0.10008	0.9999
1.875	0.19999999999999998	0.4	0.10008	0.9999
2.0	0.3000000000000001	0.19999999999999998	0.10008	0.9999

Max squeezing[P] over all parameters.
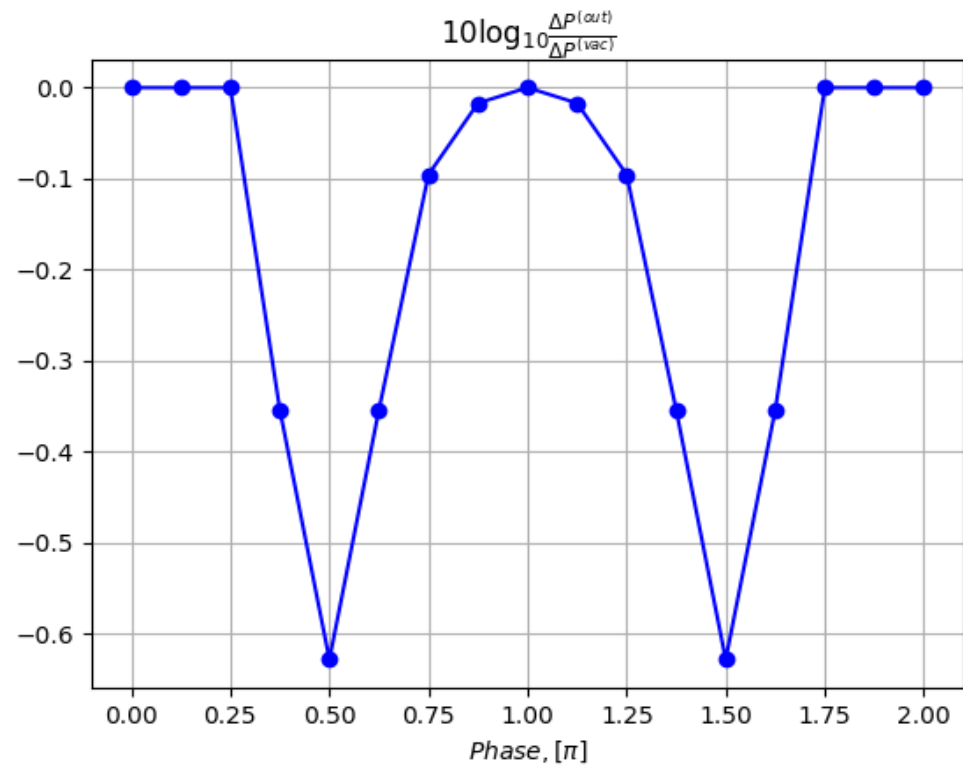

Minimizing set of BS parameters.

Phase, [pi]	T1	T4	T2	T3
0.0	0.1	1.0	0.0001	0.9999
0.125	0.1	1.0	0.0001	0.9999
0.25	0.1	1.0	0.0001	0.9999
0.375	0.1	0.0	0.0001	0.9999
0.5	0.1	0.0	0.0001	0.9999
0.625	0.1	0.0	0.0001	0.9999
0.75	0.7000000000000001	0.5000000000000001	0.79994	0.9999
0.875	0.6000000000000001	0.6000000000000001	0.59998	0.79994
1.0	0.1	1.0	0.0001	0.9999
1.125	0.6000000000000001	0.6000000000000001	0.59998	0.79994
1.25	0.7000000000000001	0.5000000000000001	0.79994	0.9999
1.375	0.1	0.0	0.0001	0.9999
1.5	0.1	0.0	0.0001	0.9999
1.625	0.1	0.0	0.0001	0.9999
1.75	0.1	1.0	0.0001	0.9999
1.875	0.1	1.0	0.0001	0.9999
2.0	0.1	1.0	0.0001	0.9999

2. Single photon goes to the second(top) channel. Coherent state (alpha=1) goes to the first(bottom) channel. **First and only first** detector clicks.

$$\frac{1}{\sqrt{2}} \Delta[X^{(1)} - X^{(2)}]^{(out)}$$
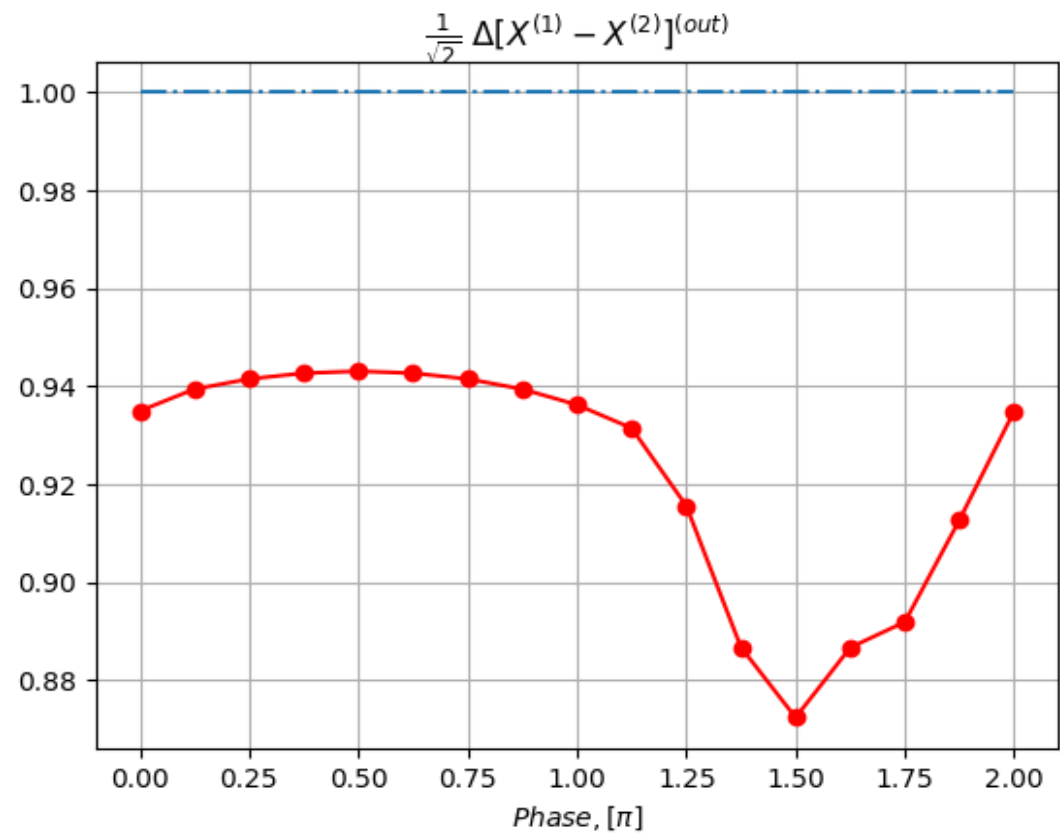
EPR[X] correlations and minimizing parameters.

Phase, [pi]	T1	T4	T2	T3
0.0	0.7000000000000001	0.7999999999999999	0.9999	0.10008
0.125	0.79999999999999999	1.0	0.9999	0.0001
0.25	0.7000000000000001	1.0	0.9999	0.0001
0.375	0.7000000000000001	1.0	0.9999	0.0001
0.5	0.7000000000000001	1.0	0.9999	0.0001
0.625	0.7000000000000001	1.0	0.9999	0.0001
0.75	0.7000000000000001	1.0	0.9999	0.0001
0.875	0.79999999999999999	1.0	0.9999	0.0001
1.0	0.89999999999999999	1.0	0.9999	0.0001
1.125	0.89999999999999999	1.0	0.9999	0.0001
1.25	0.7000000000000001	1.0	0.9999	0.10008
1.375	0.79999999999999999	1.0	0.9999	0.10008
1.5	0.79999999999999999	1.0	0.9999	0.10008
1.625	0.79999999999999999	1.0	0.9999	0.10008
1.75	0.79999999999999999	0.89999999999999999	0.9999	0.10008
1.875	0.79999999999999999	0.79999999999999999	0.9999	0.10008
2.0	0.7000000000000001	0.79999999999999999	0.9999	0.10008
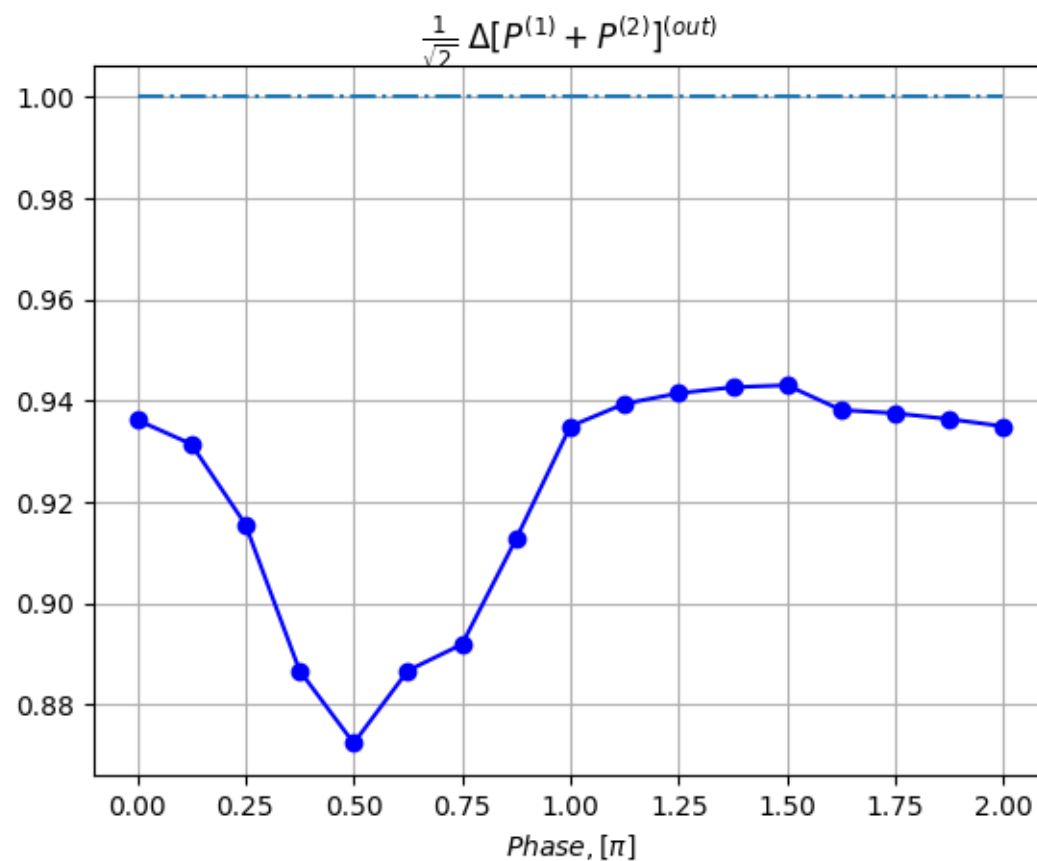
$$\frac{1}{\sqrt{2}} \Delta[P^{(1)} + P^{(2)}]^{(out)}$$

EPR[P] correlations and minimizing parameters.

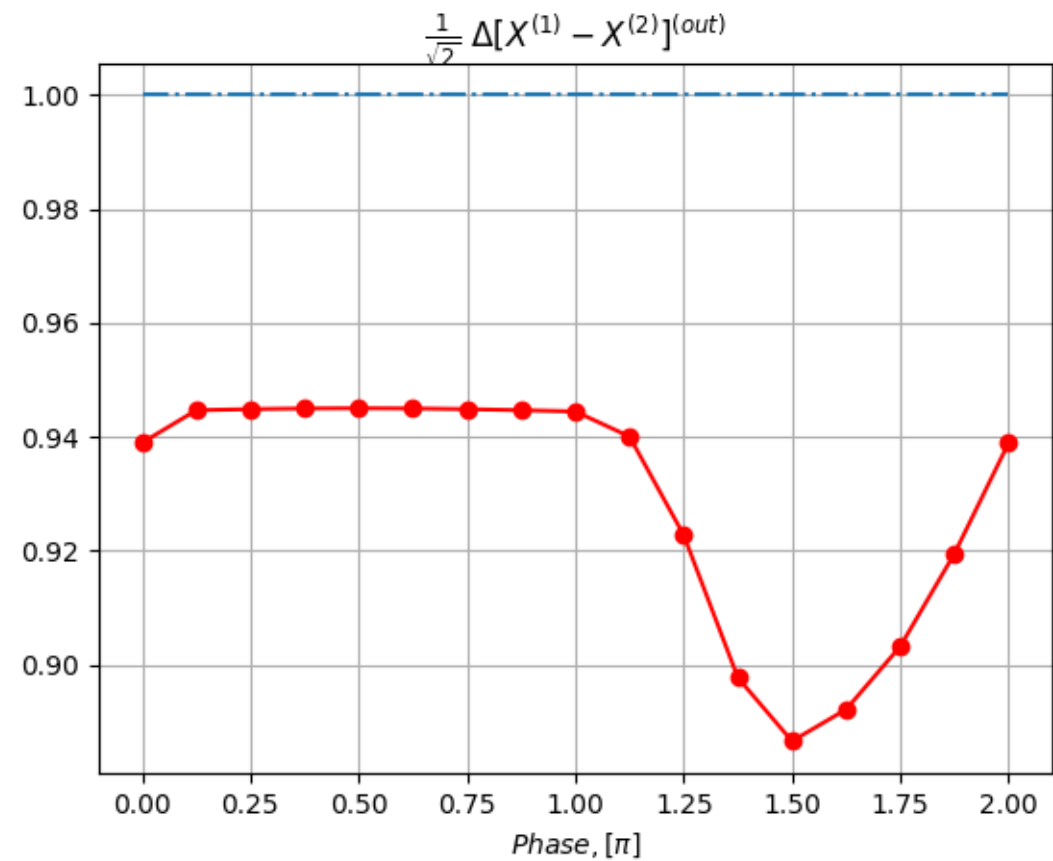| Phase, [pi]	T1	T4	T2	T3
0.0	0.8999999999999999	0.0	0.9999	0.0001
0.125	0.8999999999999999	0.0	0.9999	0.0001
0.25	0.7000000000000001	0.0	0.9999	0.10008
0.375	0.7999999999999999	0.0	0.9999	0.10008
0.5	0.7999999999999999	0.0	0.9999	0.10008
0.625	0.7999999999999999	0.0	0.9999	0.10008
0.75	0.7999999999999999	0.1	0.9999	0.10008
0.875	0.7999999999999999	0.19999999999999998	0.9999	0.10008
1.0	0.7000000000000001	0.19999999999999998	0.9999	0.10008
1.125	0.7999999999999999	0.0	0.9999	0.0001
1.25	0.7000000000000001	0.0	0.9999	0.0001
1.375	0.7000000000000001	0.0	0.9999	0.0001
1.5	0.7000000000000001	0.0	0.9999	0.0001
1.625	0.7999999999999999	0.0	0.9999	0.0001
1.75	0.8999999999999999	0.0	0.9999	0.0001
1.875	0.8999999999999999	0.0	0.9999	0.0001
2.0	0.8999999999999999	0.0	0.9999	0.0001

Probabilities for **only first** detector to click in case of EPR minimizing configuration form the previous slide.
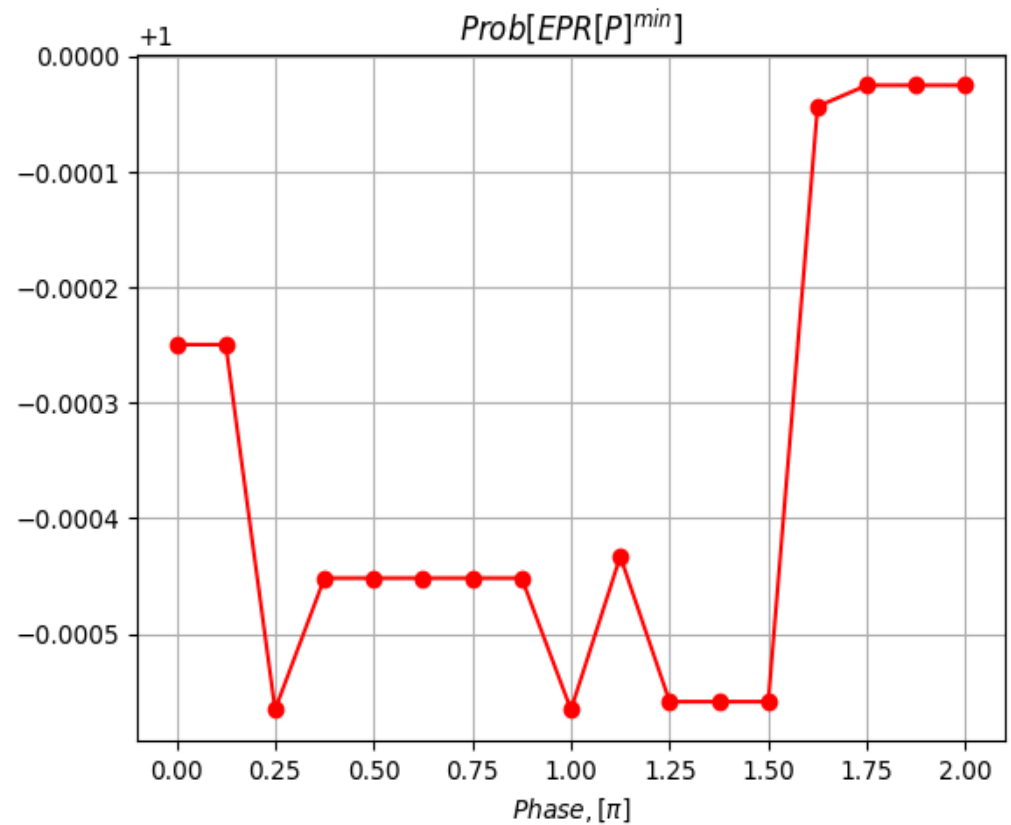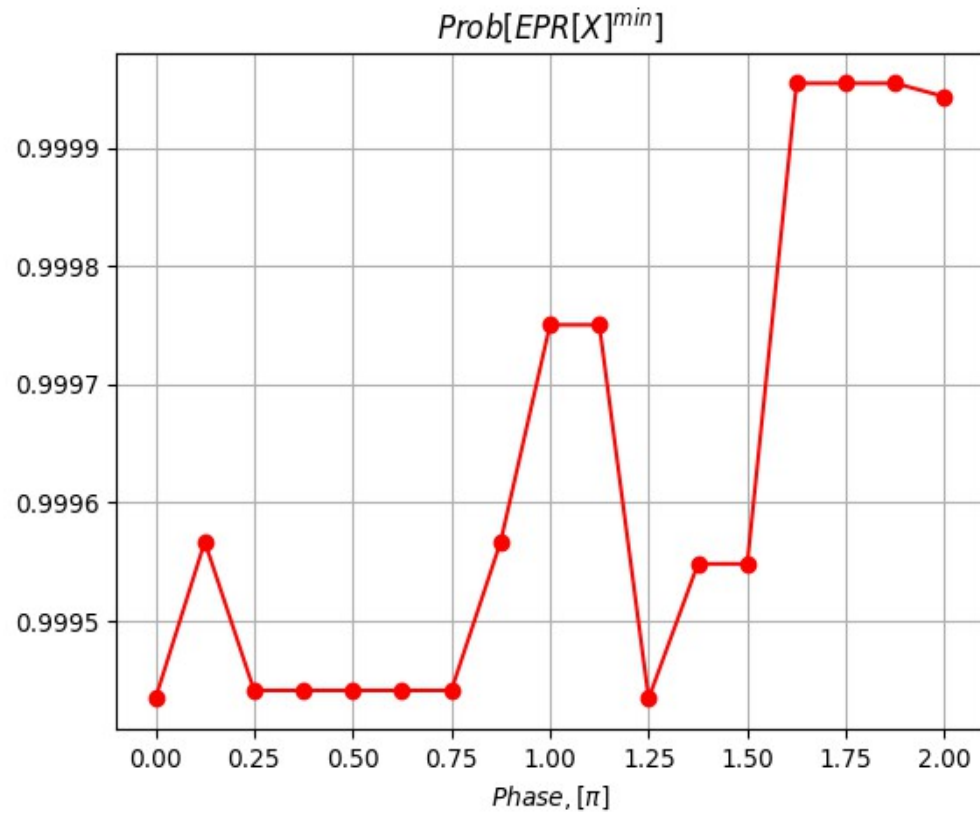
1. Single photon goes to the second(top) channel. Coherent state (alpha=1) goes to the first(bottom) channel. **Both** detectors click.

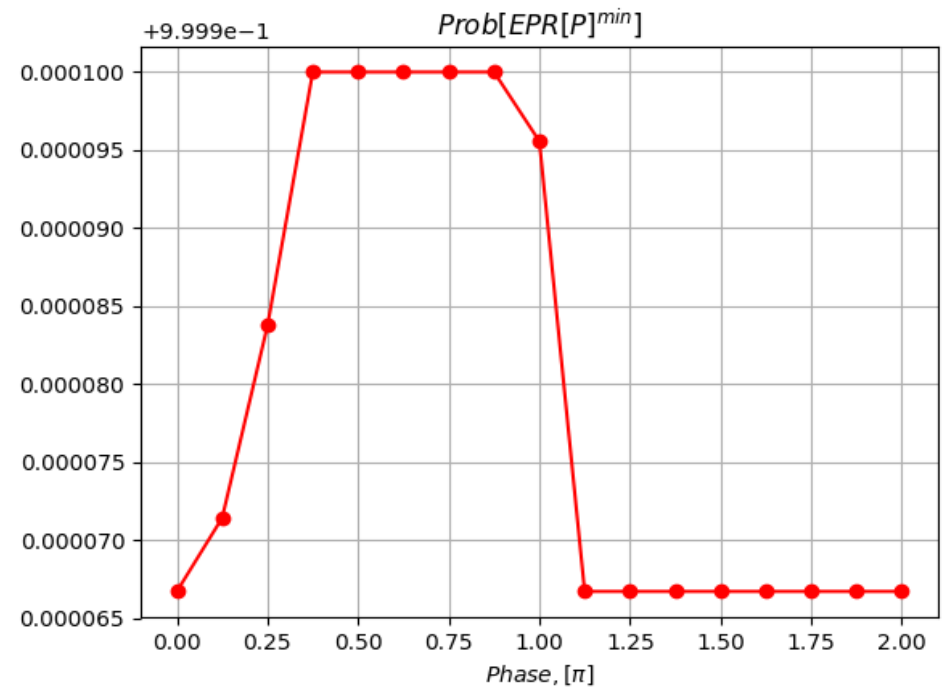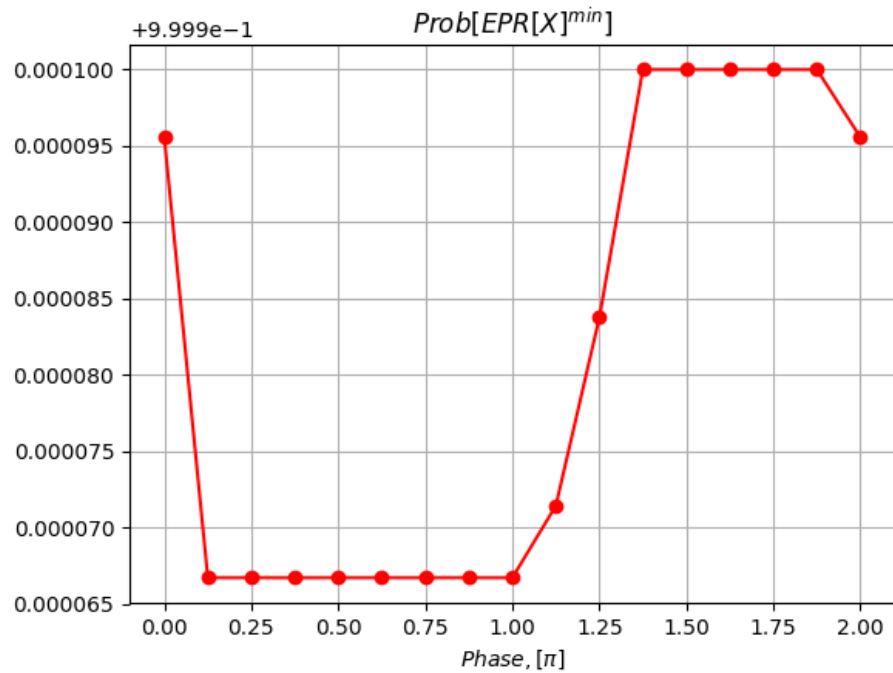EPR[X] correlations and minimizing parameters.

$$\frac{1}{\sqrt{2}}\Delta[X^{(1)} - X^{(2)}]^{(out)}$$

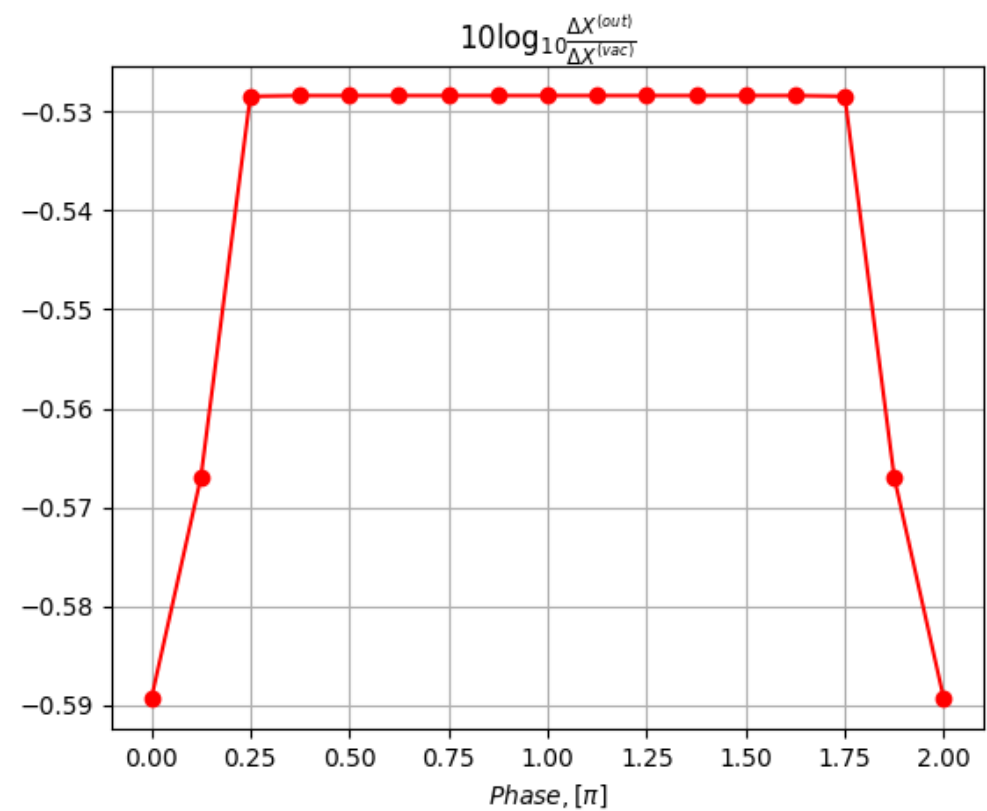| Phase, [pi]	T1	T4	T2	T3
0.0	0.19999999999999998	0.7999999999999999	0.9999	0.8999199999999998
0.125	0.19999999999999998	1.0	0.9999	0.0001
0.25	0.19999999999999998	1.0	0.9999	0.0001
0.375	0.19999999999999998	1.0	0.9999	0.0001
0.5	0.7999999999999999	1.0	0.0001	0.9999
0.625	0.19999999999999998	1.0	0.9999	0.0001
0.75	0.7999999999999999	0.5000000000000001	0.0001	0.9999
0.875	0.19999999999999998	1.0	0.9999	0.0001
1.0	0.7999999999999999	0.0	0.0001	0.9999
1.125	0.19999999999999998	1.0	0.9999	0.20005999999999996
1.25	0.19999999999999998	1.0	0.9999	0.59998
1.375	0.19999999999999998	1.0	0.9999	0.9999
1.5	0.7999999999999999	1.0	0.9999	0.9999
1.625	0.7999999999999999	0.8999999999999999	0.9999	0.9999
1.75	0.7999999999999999	0.7000000000000001	0.9999	0.9999
1.875	0.7999999999999999	0.5000000000000001	0.9999	0.9999
2.0	0.19999999999999998	0.7999999999999999	0.9999	0.8999199999999998

EPR[P] correlations
and minimizing
parameters.

$$\frac{1}{\sqrt{2}} \Delta[P^{(1)} + P^{(2)}]^{(out)}$$
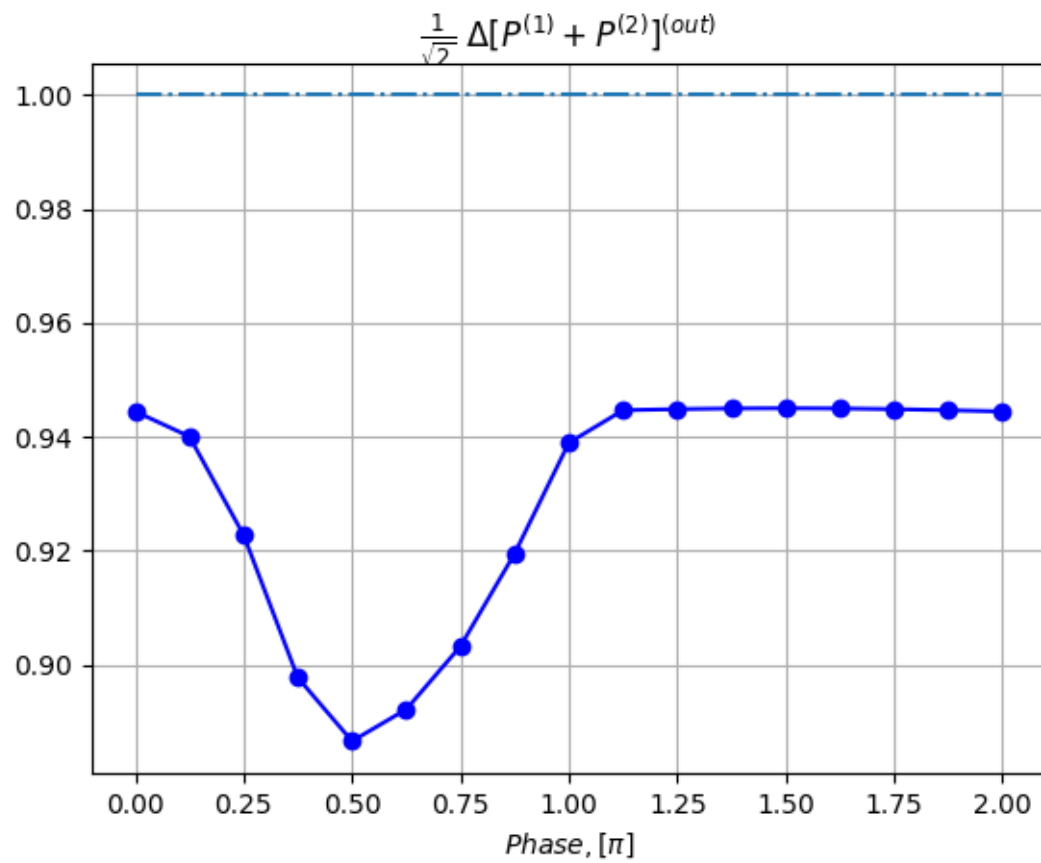
Phase, [pi]	T1	T4	T2	T3
0.0	0.7999999999999999	1.0	0.0001	0.9999
0.125	0.19999999999999998	0.0	0.9999	0.20005999999999996
0.25	0.19999999999999998	0.0	0.9999	0.59998
0.375	0.19999999999999998	0.0	0.9999	0.9999
0.5	0.7999999999999999	0.0	0.9999	0.9999
0.625	0.7999999999999999	0.1	0.9999	0.9999
0.75	0.7999999999999999	0.3000000000000001	0.9999	0.9999
0.875	0.7999999999999999	0.5000000000000001	0.9999	0.9999
1.0	0.19999999999999998	0.19999999999999998	0.9999	0.8999199999999998
1.125	0.19999999999999998	0.0	0.9999	0.0001
1.25	0.19999999999999998	0.0	0.9999	0.0001
1.375	0.19999999999999998	0.0	0.9999	0.0001
1.5	0.7999999999999999	0.0	0.0001	0.9999
1.625	0.19999999999999998	0.0	0.9999	0.0001
1.75	0.7999999999999999	0.5000000000000001	0.0001	0.9999
1.875	0.19999999999999998	0.0	0.9999	0.0001
2.0	0.7999999999999999	1.0	0.0001	0.9999

Probabilities for **Both** detectors to click in case of EPR minimizing configuration form the previous slide.

Max squeezing[X] over all parameters.

$$10\log_{10}\frac{\Delta X^{(out)}}{\Delta X^{(vac)}}$$

Phase, [pi]	T1	T4	T2	T3
0.0	0.19999999999999998	0.7999999999999999	0.9999	0.8999199999999998
0.125	0.19999999999999998	0.8999999999999999	0.9999	0.69996
0.25	0.19999999999999998	0.8999999999999999	0.9999	0.5000000000000001
0.375	0.19999999999999998	1.0	0.9999	0.0001
0.5	0.19999999999999998	1.0	0.9999	0.0001
0.625	0.19999999999999998	1.0	0.9999	0.0001
0.75	0.19999999999999998	1.0	0.9999	0.0001
0.875	0.19999999999999998	1.0	0.9999	0.0001
1.0	0.7999999999999999	0.0	0.0001	0.9999
1.125	0.19999999999999998	1.0	0.9999	0.0001
1.25	0.19999999999999998	1.0	0.9999	0.0001
1.375	0.19999999999999998	1.0	0.9999	0.0001
1.5	0.19999999999999998	1.0	0.9999	0.0001
1.625	0.19999999999999998	1.0	0.9999	0.0001
1.75	0.19999999999999998	0.8999999999999999	0.9999	0.5000000000000001
1.875	0.19999999999999998	0.8999999999999999	0.9999	0.69996
2.0	0.19999999999999998	0.7999999999999999	0.9999	0.8999199999999998

Max squeezing[P] over all parameters.

$$10\log_{10}\frac{\Delta P^{(out)}}{\Delta P^{(vac)}}$$
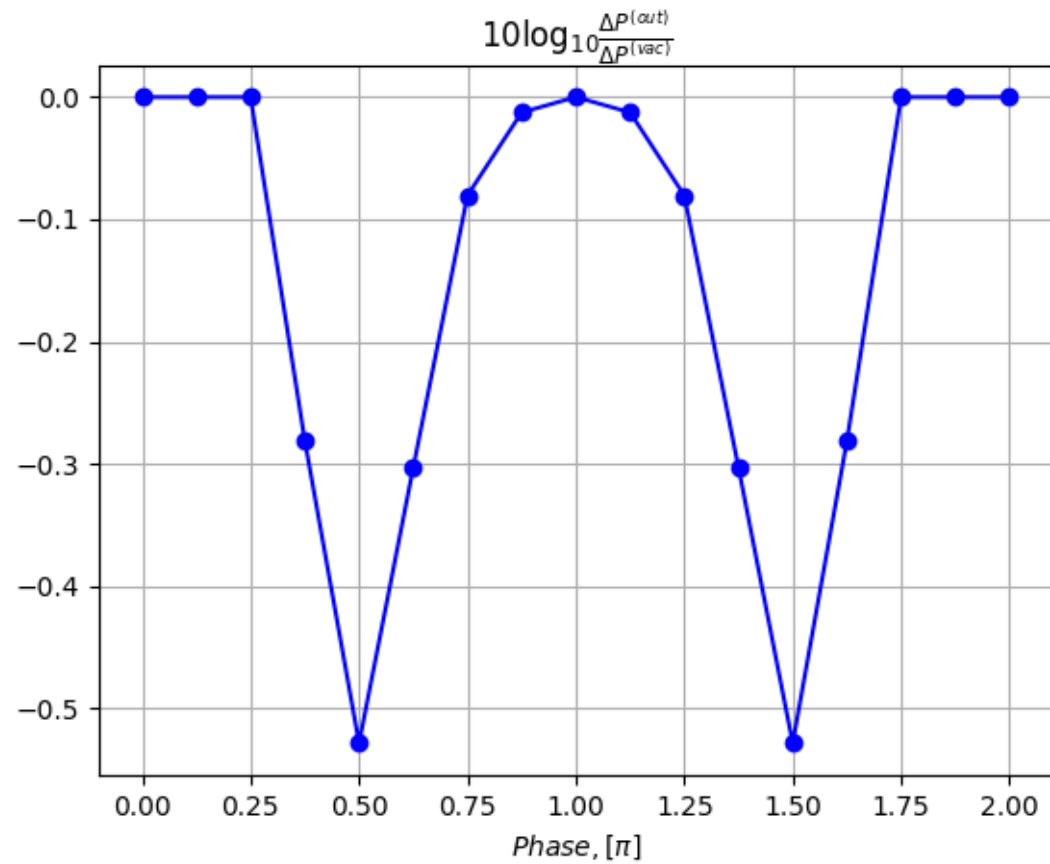
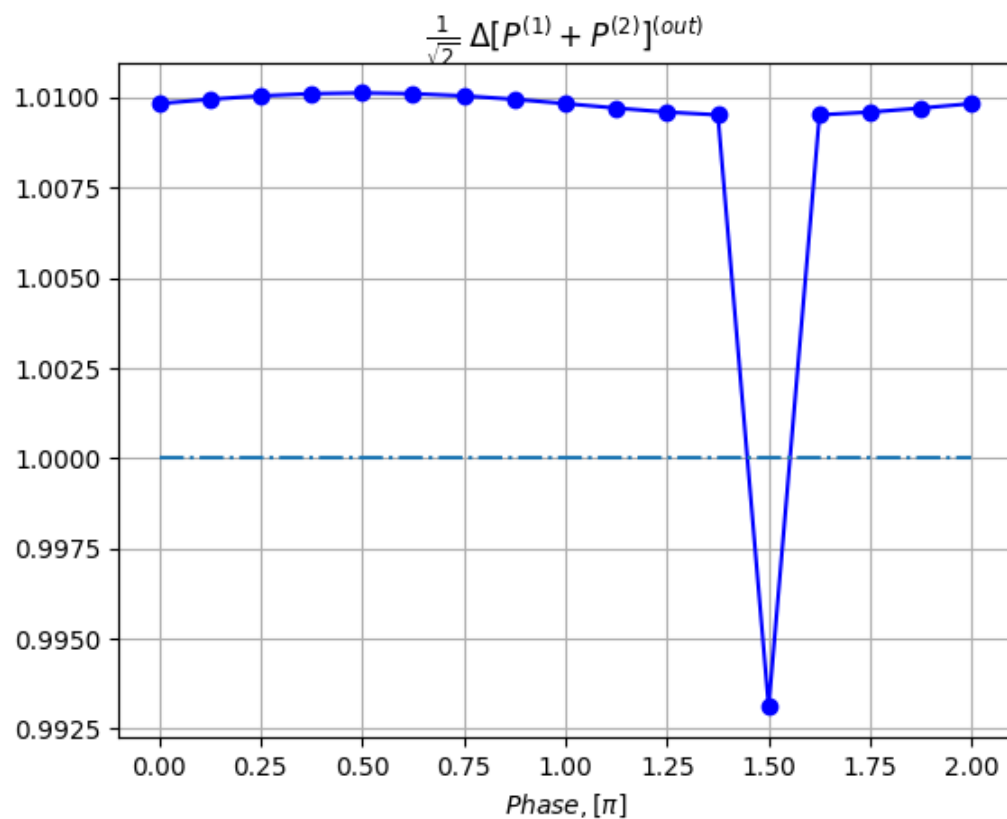| Phase, [pi]	T1	T4	T2	T3
0.0	1.0	0.0	0.9999	0.0001
0.125	1.0	0.0	0.9999	0.0001
0.25	1.0	0.0	0.9999	0.0001
0.375	0.7999999999999999	0.0	0.0001	0.9999
0.5	0.7999999999999999	0.0	0.0001	0.9999
0.625	0.7999999999999999	0.1	0.5000000000000001	0.9999
0.75	0.7999999999999999	0.5000000000000001	0.9999	0.8999199999999998
0.875	0.7999999999999999	0.7000000000000001	0.8999199999999998	0.69996
1.0	1.0	0.0	0.9999	0.0001
1.125	0.7999999999999999	0.7000000000000001	0.8999199999999998	0.69996
1.25	0.7999999999999999	0.5000000000000001	0.9999	0.8999199999999998
1.375	0.7999999999999999	0.1	0.5000000000000001	0.9999
1.5	0.7999999999999999	0.0	0.0001	0.9999
1.625	0.7999999999999999	0.0	0.0001	0.9999
1.75	1.0	0.0	0.9999	0.0001
1.875	1.0	0.0	0.9999	0.0001
2.0	1.0	0.0	0.9999	0.0001

1. Single photon goes to the second(top) channel. Coherent state (alpha=1) goes to the first(bottom) channel. **None** of detectors click.
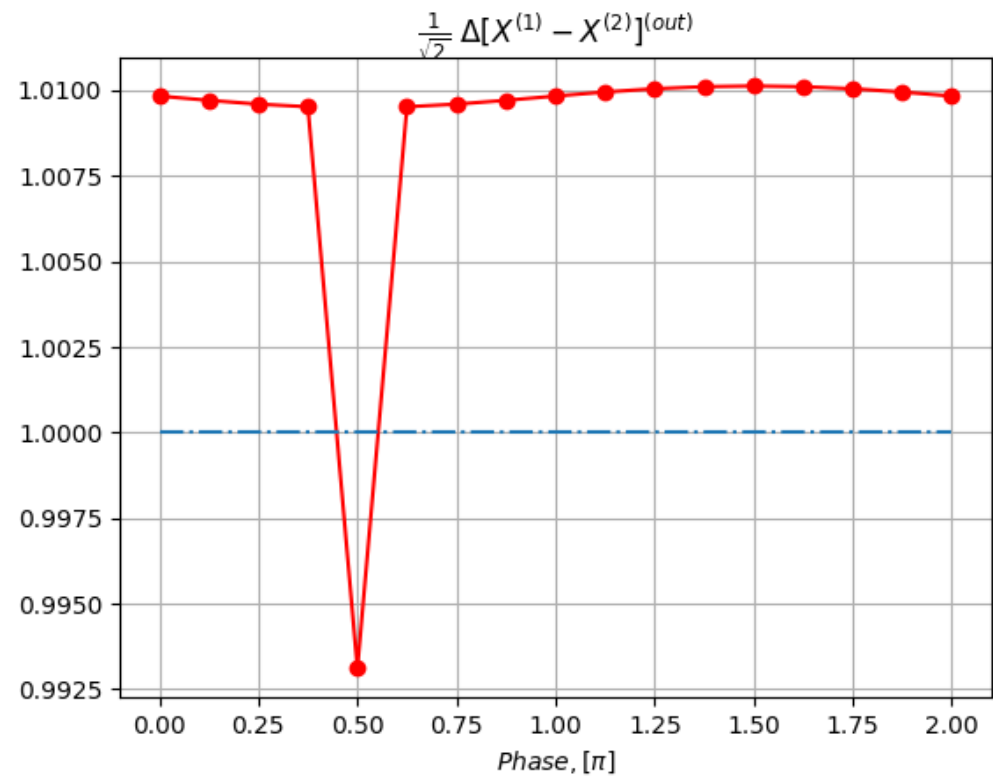
$$\frac{1}{\sqrt{2}}\Delta[X^{(1)} - X^{(2)}]^{(out)}$$

EPR[X] correlations and minimizing parameters.

Phase, [pi]	T1	T4	T2	T3
0.0	0.8999999999999999	1.0	0.99999	1e-05
0.125	0.8999999999999999	1.0	0.99999	1e-05
0.25	0.8999999999999999	1.0	0.99999	1e-05
0.375	0.8999999999999999	1.0	0.99999	1e-05
0.5	0.1	1.0	0.10000799999999999	0.99999
0.625	0.8999999999999999	1.0	0.99999	1e-05
0.75	0.8999999999999999	1.0	0.99999	1e-05
0.875	0.8999999999999999	1.0	0.99999	1e-05
1.0	0.8999999999999999	1.0	0.99999	1e-05
1.125	0.8999999999999999	1.0	0.99999	1e-05
1.25	0.8999999999999999	1.0	0.99999	1e-05
1.375	0.8999999999999999	1.0	0.99999	1e-05
1.5	0.8999999999999999	1.0	0.99999	1e-05
1.625	0.8999999999999999	1.0	0.99999	1e-05
1.75	0.1	0.5000000000000001	1e-05	0.99999
1.875	0.8999999999999999	1.0	0.99999	1e-05
2.0	0.8999999999999999	1.0	0.99999	1e-05

$$\frac{1}{\sqrt{2}} \Delta[P^{(1)} + P^{(2)}]^{(out)}$$

EPR[P] correlations and minimizing parameters.

Phase, [pi]	T1	T4	T2	T3
0.0	0.8999999999999999	0.0	0.99999	1e-05
0.125	0.8999999999999999	0.0	0.99999	1e-05
0.25	0.8999999999999999	0.0	0.99999	1e-05
0.375	0.8999999999999999	0.0	0.99999	1e-05
0.5	0.8999999999999999	0.0	0.99999	1e-05
0.625	0.8999999999999999	0.0	0.99999	1e-05
0.75	0.1	0.50000000000000001	1e-05	0.99999
0.875	0.8999999999999999	0.0	0.99999	1e-05
1.0	0.8999999999999999	0.0	0.99999	1e-05
1.125	0.8999999999999999	0.0	0.99999	1e-05
1.25	0.8999999999999999	0.0	0.99999	1e-05
1.375	0.8999999999999999	0.0	0.99999	1e-05
1.5	0.8999999999999999	0.0	0.99999	0.10000799999999999
1.625	0.8999999999999999	0.0	0.99999	1e-05
1.75	0.8999999999999999	0.0	0.99999	1e-05
1.875	0.8999999999999999	0.0	0.99999	1e-05
2.0	0.8999999999999999	0.0	0.99999	1e-05

Probabilities for **None** of the detectors to click in case of EPR minimizing configuration form the previous slide.
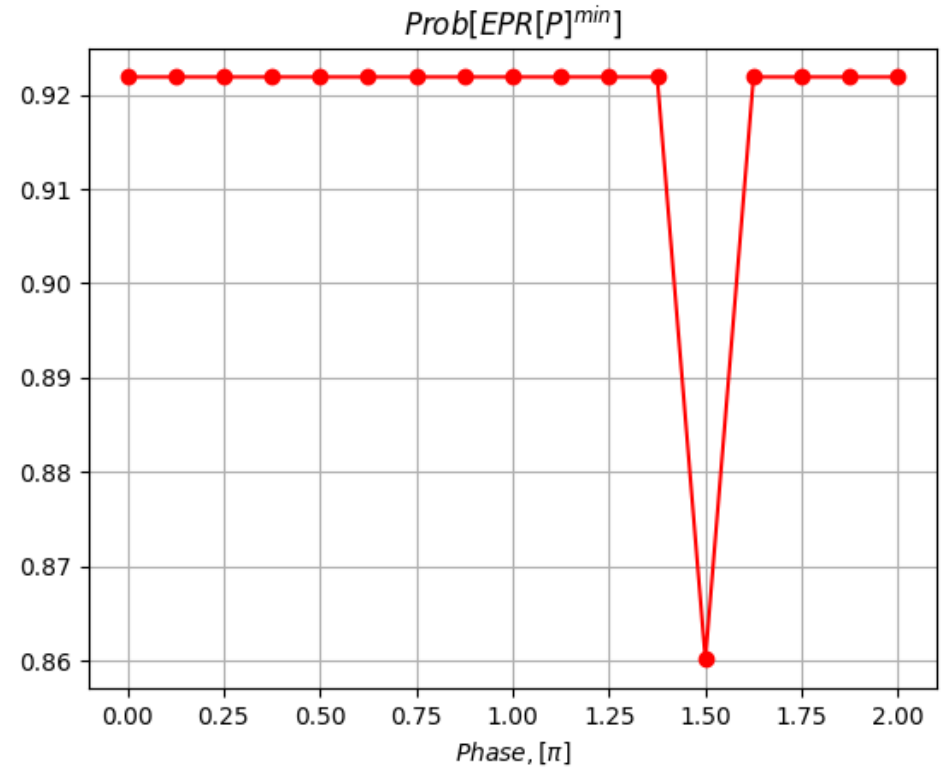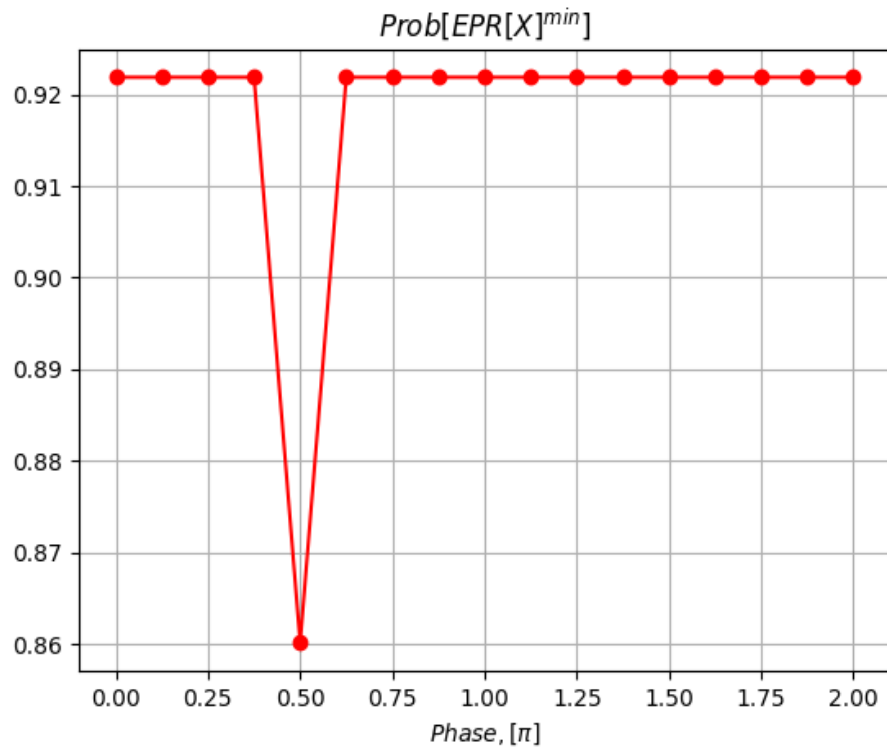
Max squeezing[X] over all parameters.
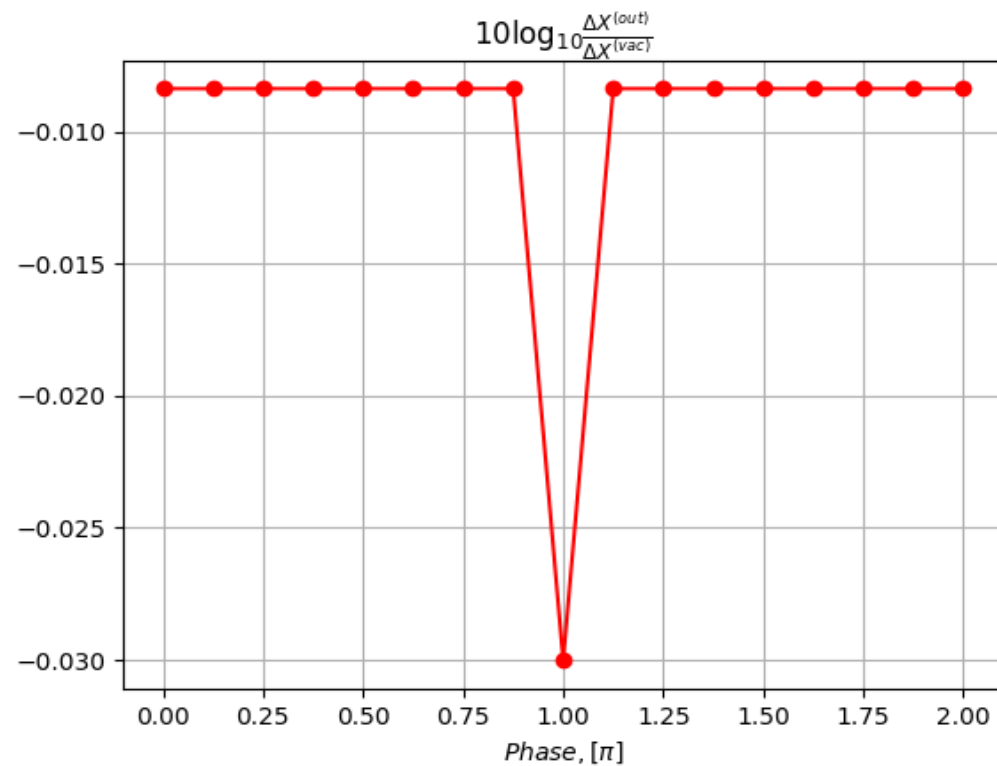
Phase, [pi]	T1	T4	T2	T3
0.0	0.0	0.0	0.10000799999999999	0.99999
0.125	1.0	1.0	0.99999	0.30000400000000005
0.25	1.0	1.0	0.99999	0.30000400000000005
0.375	1.0	1.0	0.99999	0.30000400000000005
0.5	1.0	1.0	0.99999	0.30000400000000005
0.625	1.0	1.0	0.99999	0.30000400000000005
0.75	1.0	1.0	0.99999	0.30000400000000005
0.875	1.0	1.0	0.99999	0.30000400000000005
1.0	0.8999999999999999	0.5000000000000001	0.99999	0.10000799999999999
1.125	1.0	1.0	0.99999	0.30000400000000005
1.25	1.0	1.0	0.99999	0.30000400000000005
1.375	1.0	1.0	0.99999	0.30000400000000005
1.5	1.0	1.0	0.99999	0.30000400000000005
1.625	1.0	1.0	0.99999	0.30000400000000005
1.75	1.0	1.0	0.99999	0.30000400000000005
1.875	1.0	1.0	0.99999	0.30000400000000005
2.0	0.0	0.0	0.10000799999999999	0.99999

Max squeezing[P] over all parameters.

$$10\log_{10}\frac{\Delta P^{(out)}}{\Delta P^{(vac)}}$$
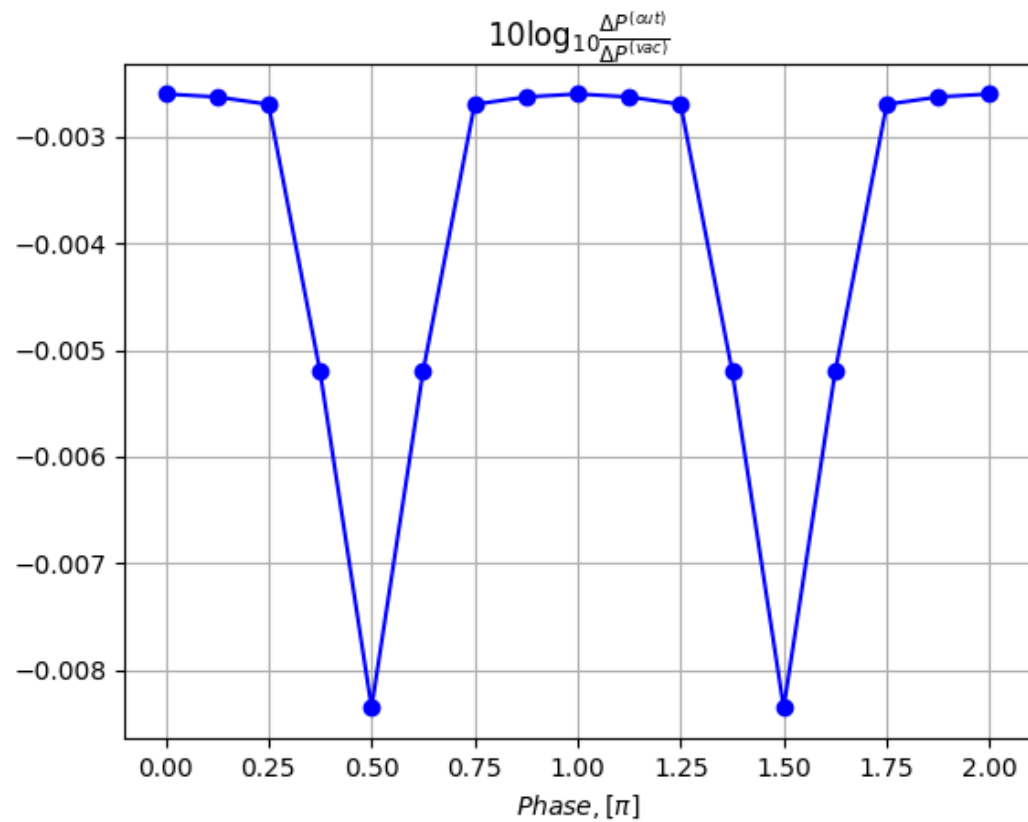
Phase, [pi]	T1	T4	T2	T3
0.0	0.1	1.0	1e-05	0.99999
0.125	0.8999999999999999	0.0	0.99999	1e-05
0.25	0.8999999999999999	0.0	0.99999	1e-05
0.375	0.0	0.0	0.200006000000000002	0.99999
0.5	0.0	0.0	0.100007999999999999	0.99999
0.625	0.0	0.0	0.200006000000000002	0.99999
0.75	0.8999999999999999	0.0	0.99999	1e-05
0.875	0.8999999999999999	0.0	0.99999	1e-05
1.0	0.1	1.0	1e-05	0.99999
1.125	0.8999999999999999	0.0	0.99999	1e-05
1.25	0.8999999999999999	0.0	0.99999	1e-05
1.375	0.0	0.0	0.100007999999999999	0.99999
1.5	0.0	0.0	0.100007999999999999	0.99999
1.625	0.0	0.0	0.100007999999999999	0.99999
1.75	0.8999999999999999	0.0	0.99999	1e-05
1.875	0.8999999999999999	0.0	0.99999	1e-05
2.0	0.1	1.0	1e-05	0.99999