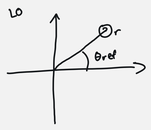
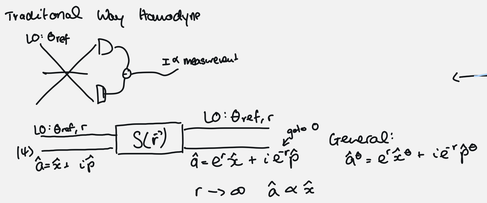
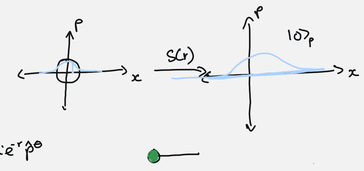


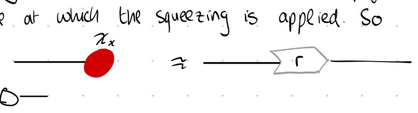
Traditional Way Homodyne



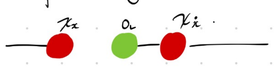


General:
$\hat{a}^\theta = e^r \hat{x}^\theta + i e^{-r} \hat{p}^\theta$

In the high squeezing limit this acts like ~~x_x a projection~~ onto the any quadrature depending on the phase at which the squeezing is applied. So

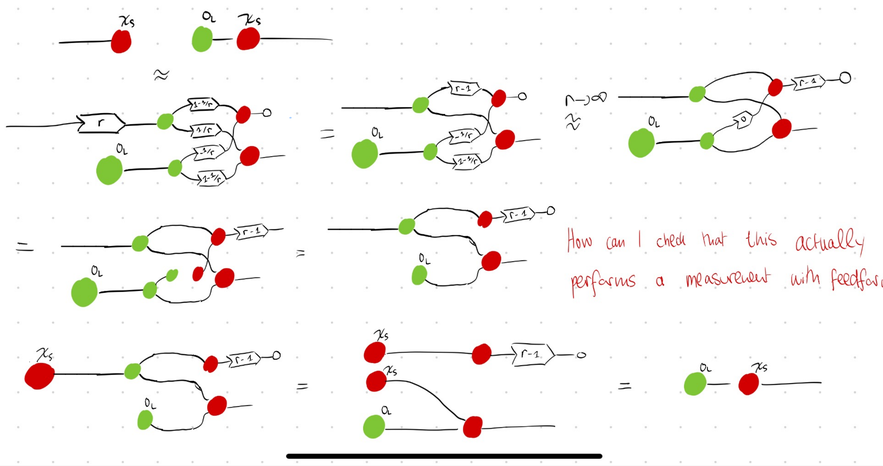


② The original diagram is

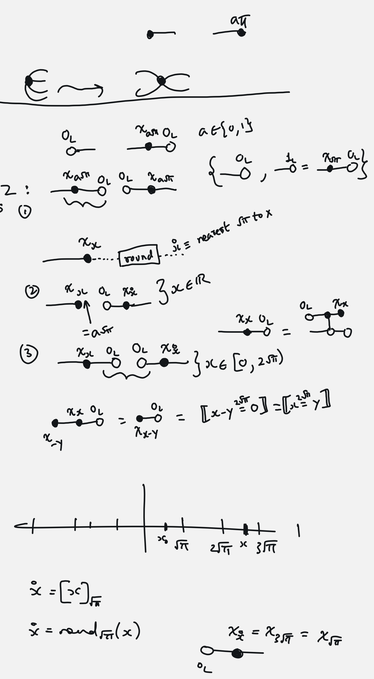


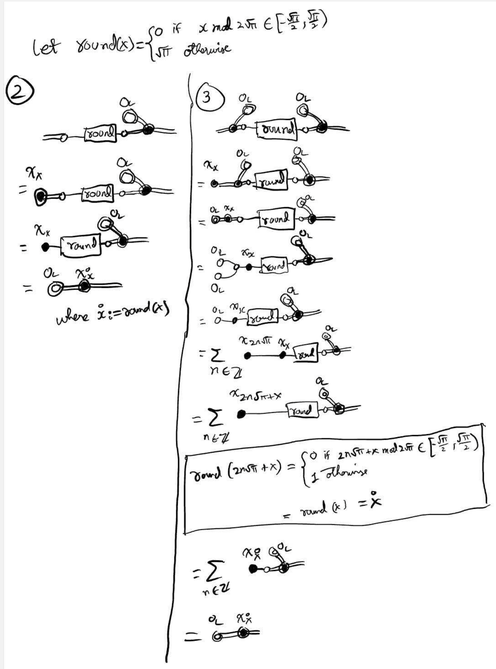
where $\mathring{x}$ = round x to nearest x

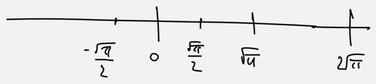
Let's make things simpler for now and consider

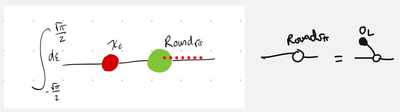


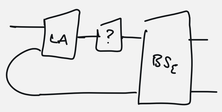
How can I check that this actually performs a measurement with feedforward?



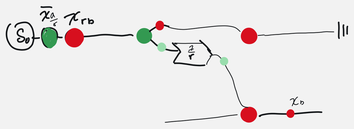








arxiv 9072021
Fig 2

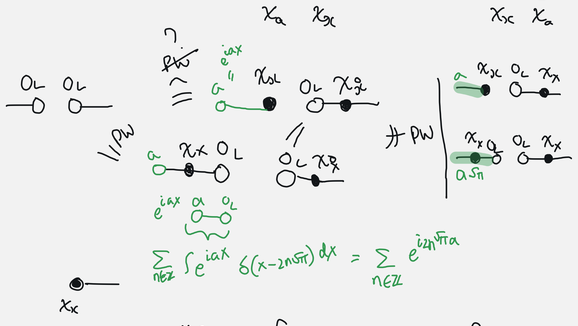


≈ $B(\theta) = \begin{bmatrix} \sin\theta & \end{bmatrix}$

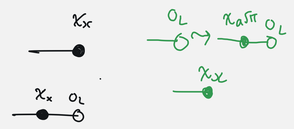
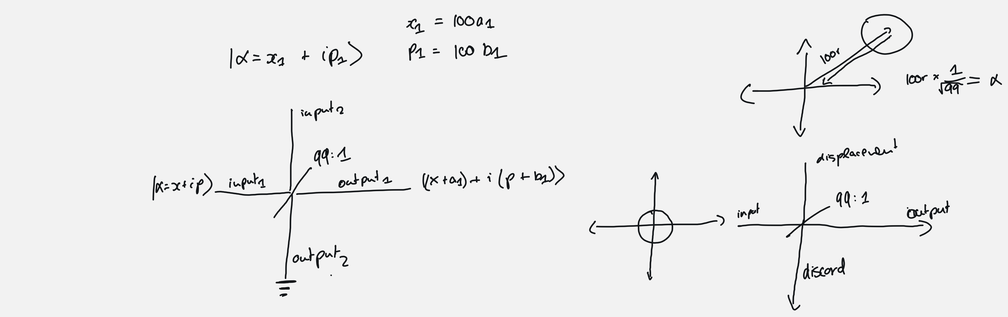
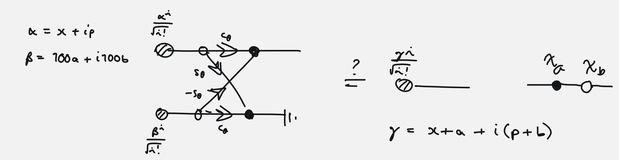
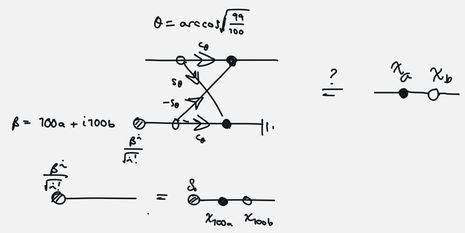
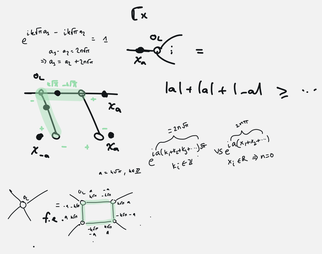
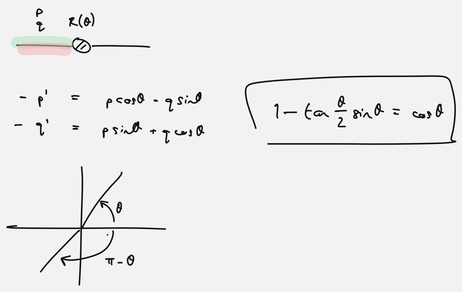
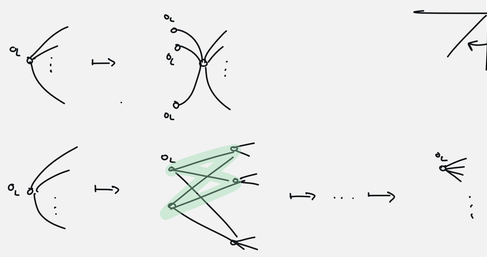
$t^2 + r^2 = 1$

$t = \sin\theta$

$r = \cos\theta$



$$\sum_{n\in\mathbb{Z}} \int e^{iax}\,\delta(x - 2n\sqrt{\pi})\,dx = \sum_{n\in\mathbb{Z}} e^{i2n\sqrt{\pi}a}$$

$$\langle x_a | o_L \rangle = \int_{dx} x_a(x)\, o_L(x) = \int dx\, e^{iax}\, [\![x \overset{\sqrt{\pi}}{=} 0]\!]$$

$$= \sum_{n\in\mathbb{Z}} e^{ia2n\sqrt{\pi}}$$