dispersive regime $g/\Delta \ll 1$?

dispersive measurement.

QND :

non-QND : non-QND measurement는 측정 후에 반복 측정하면 값이 바뀐다.

parametric amplifier — HEMT amplifier

noise는 "quantum limited" noise (~2K.

↳ Standard Quantum limit. $\hat a_{in} \longrightarrow \sqrt{G}\,\hat a_{in} = \hat a_{out}$

$[\hat a_{in}, \hat a_{in}^\dagger] = 1$ $[\hat a_{out}, \hat a_{out}^\dagger] \neq 1$

Caves - Haus theory of linear amplification.

$\hat a_{out} = \sqrt{G}\,\hat a_{in} + \sqrt{G-1}\, b^\dagger$, $[a_{out}, a_{out}^\dagger] = G[a_{in}, a_{in}^\dagger] + (G-1)[b^\dagger, b] = 1$,

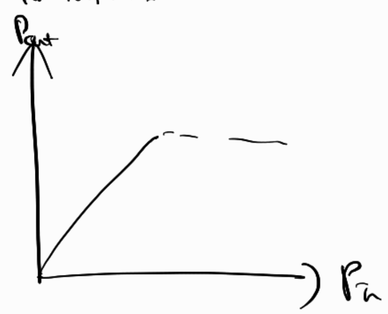
Readout SNR (power ratio) - proportional to readout time

purcell effect.

Readout Crosstalk.

PA의 limitation

P_{dB}



Ramsey Sequence.

dynamical decoupling

readout photon noise correlation