New Folder Name Up-Converted Intensity Noise

Up-converted intensity noise of the light

(Noise source : Imperfection)

(1) (Feedback voltages to PC_{V1} : Misalignment of PC_{V1})

(2) (Motion of TM, BS, MC : Isolation)

(3) (Intensity noise : Misalignment of PC_{RF1})

(4) (12MHz signal to PC_{RF0} : Deviation between the light frequency and the MC resonance frequency)

(5) (Intensity noise : Misalignment of PC_{RF0} ?)

(6) (Feedback voltages to PZT_{MC} : ???)

(1)

* $T_{PCV1-Dem}$ vs. DC bias to PC_{V1}, or Angle of the PBS

Compared with the Alex model

* Nominal gain vs. Effective gain vs. Calculated gain

Verification of the linear model (Spurious feedback path)

* With feed-around; Nominal gain vs. Effective gain

Verification of no more discrepancy

(2)

* Swing TM

max speed — max frequency

Calculation of the relative amplitude — Attenuation of the isolation

Verification of the simple spurious beam model

* Swing MC ???

(3)

* Measure the intensity noise before and after the MC

* Artificial intensity noise — Dem

Compared with the calculation using simple model (just intensity coupling between 12MHz and kHz)

* Measure the Dem. with and without noise eater

(4)

* Calculation from the Mike's model

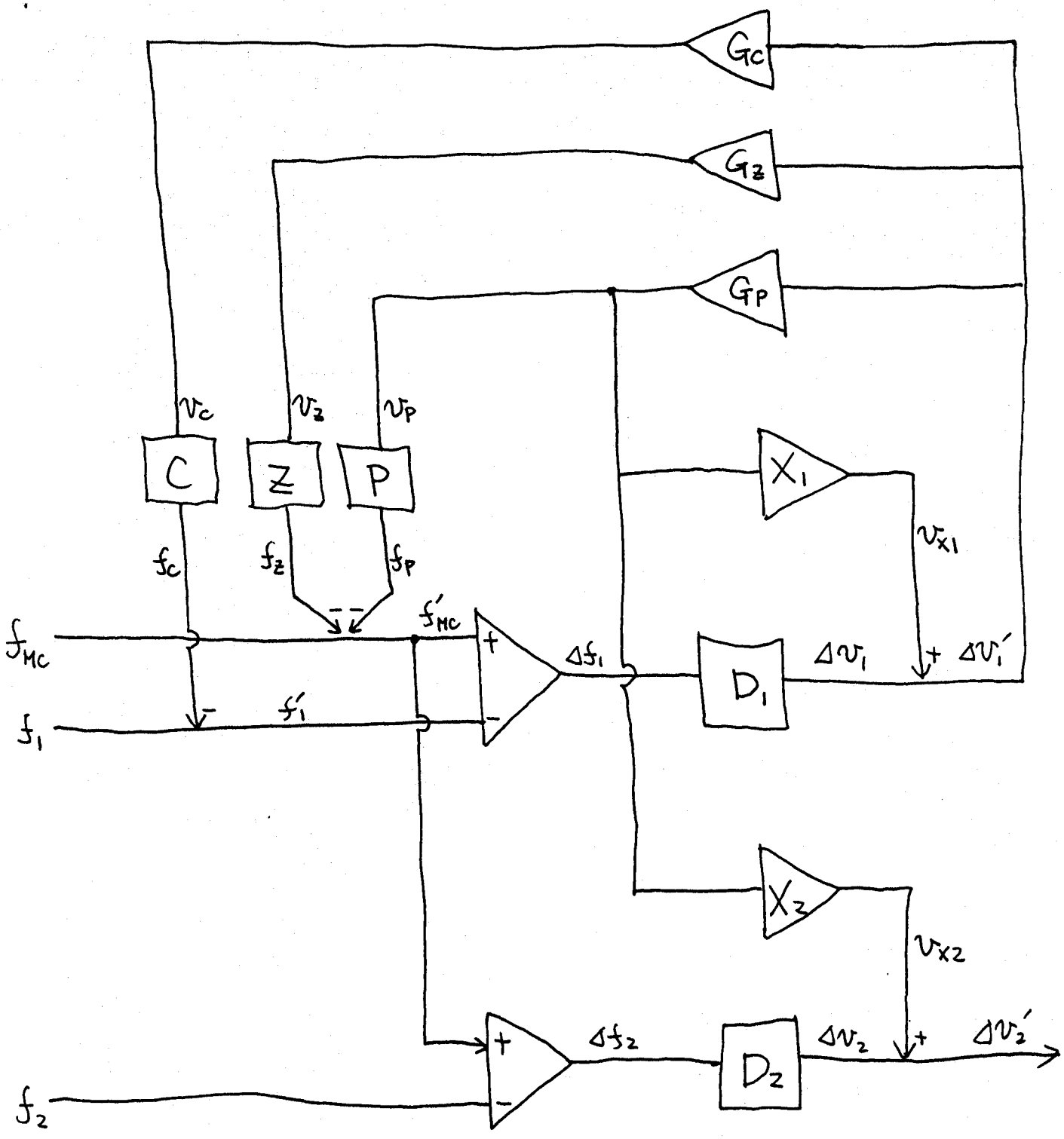
* More playing around

(5)

* Concentrating on the Dem before the MC

(6)

* PZT_{MC} voltages — Dem


Gc
Gz
Gp
vc
vz
vp
C
Z
P
fc
fz
fp
f'MC
fMC
f1
f'1
+
−
Δf1
X1
vx1
D1
Δv1
+
Δv1'
X2
vx2
Δf2
D2
Δv2
+
Δv2'
f2

$$\Delta v_2' = \frac{\begin{aligned}&(D_2 - D_2 G_P X_1 - C G_C D_1 D_2 + X_2 G_P D_1)\, f_{MC} \\ &+ (Z G_Z D_2 + P G_P D_2 - X_2 G_P) D_1 f_1 \\ &+ (G_P X_1 + C G_C D_1 - Z G_Z D_1 - P G_P D_1 - 1) D_2 f_2\end{aligned}}{1 - G_P X_1 + (Z G_Z + P G_P - C G_C) D_1}$$

$f_1, f_2 \ll f_{MC}$

$$\Delta v_2' = \frac{(D_2 - D_2 G_P X_1 - C G_C D_1 D_2 + X_2 G_P D_1) f_{MC}}{1 - G_P X_1 + (Z G_Z + P G_P - C G_C) D_1}$$

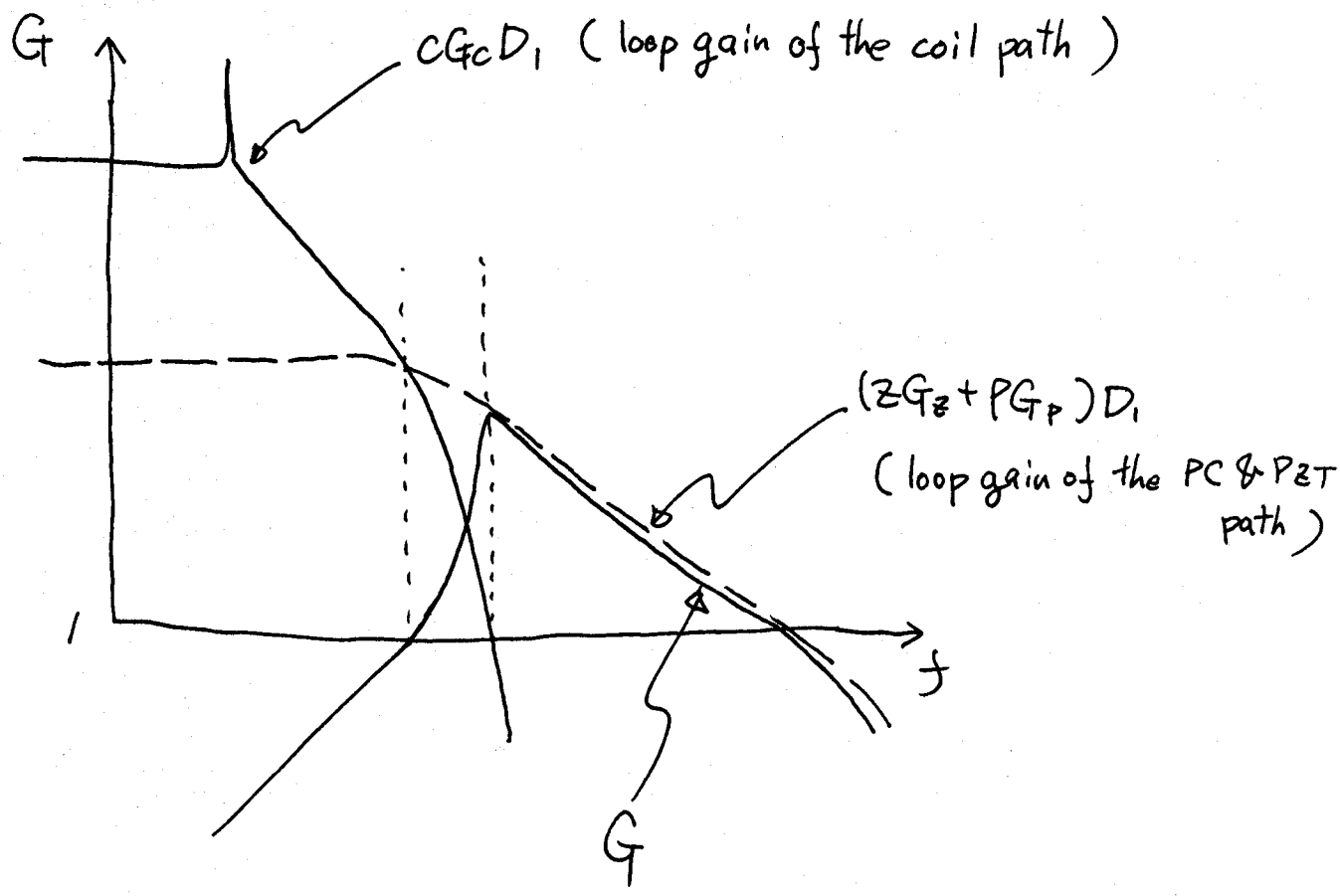
◎ Difinition of G

$$\Delta v_2'(\text{with A1}) \equiv \frac{\Delta v_2'(\text{without A1})}{1 + G}$$

$$G = \frac{(Z G_Z + P G_P) D_1 D_2 - X_2 G_P D_1}{D_2 - D_2 G_P X_1 - C G_C D_1 D_2 + X_2 G_P D_1}$$

if $X_1 = X_2 = 0$

$$G = \frac{(ZG_Z + PG_P)D_1}{1 - CG_C D_1}$$



- if $X_2 = 0$

$$G = \frac{(ZG_Z + PG_P)D_1}{1 - G_P X_1 - CG_C D_1}$$