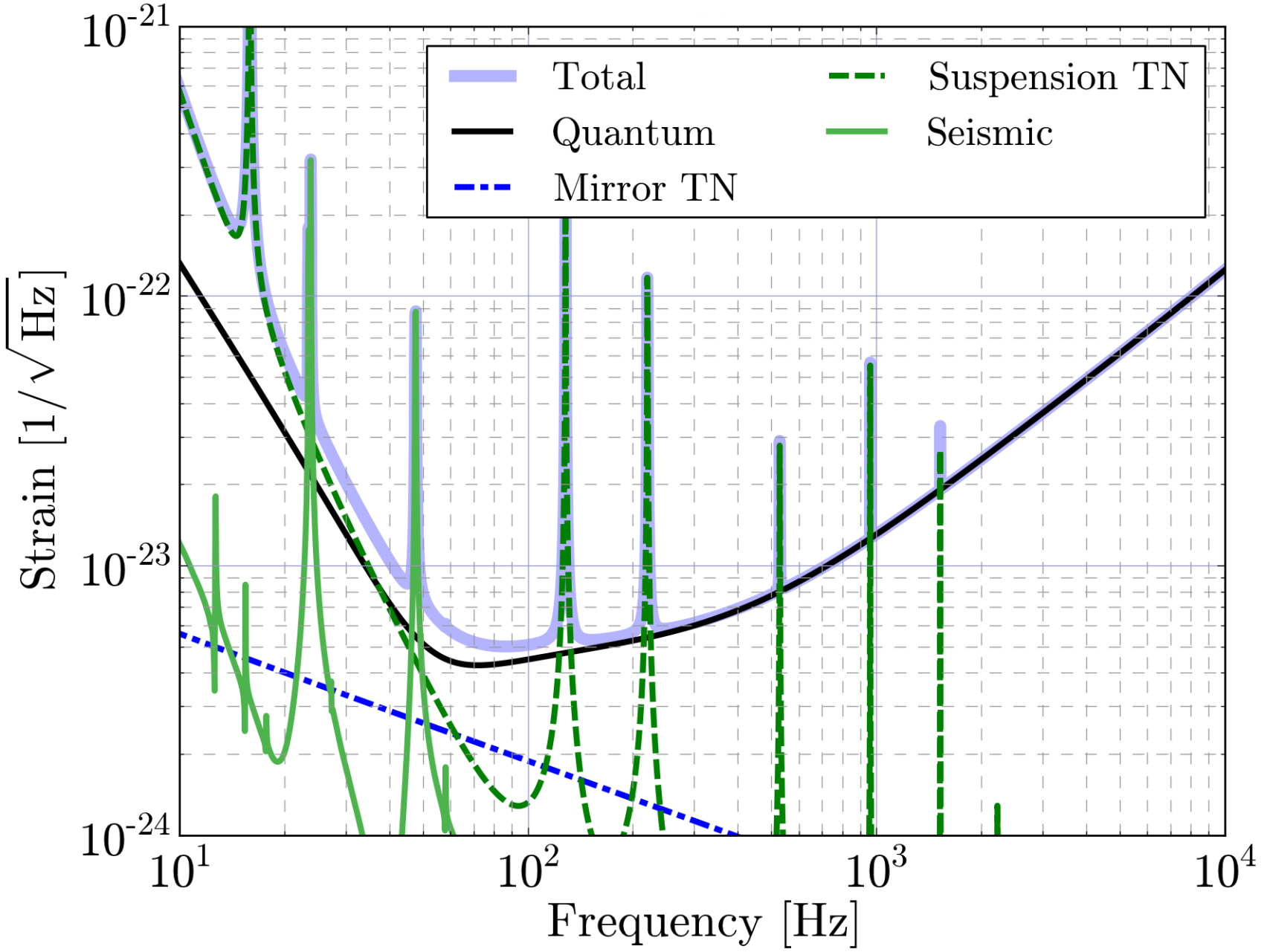
KAGRA F2F Meeting, August 1st 2012

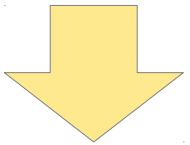
Current Status of the Main Interferometer Subsystem

Yoichi Aso
University of Tokyo

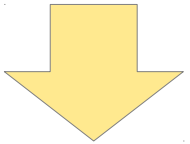
Make This Happen !



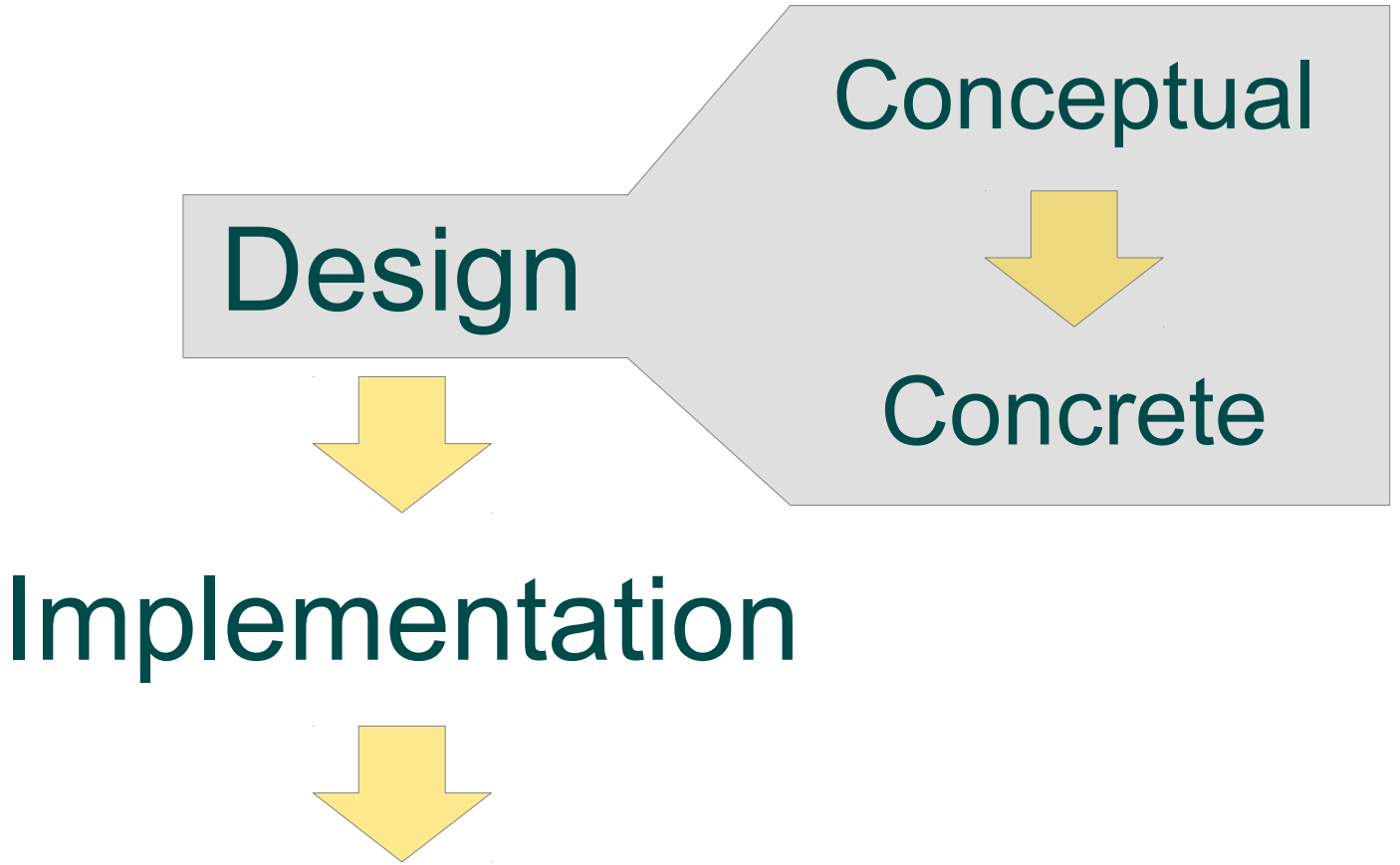
Design

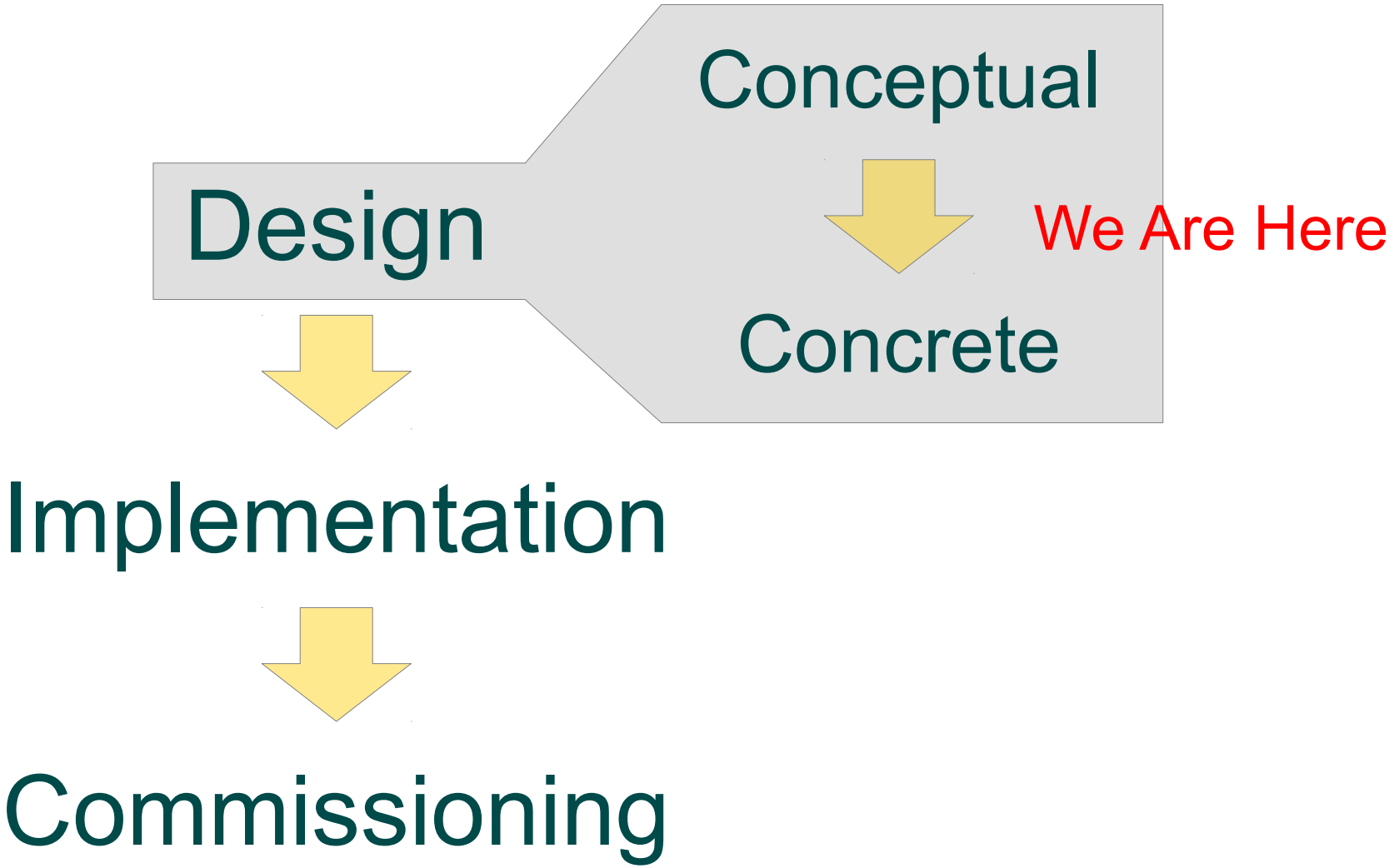


Implementation



Commissioning

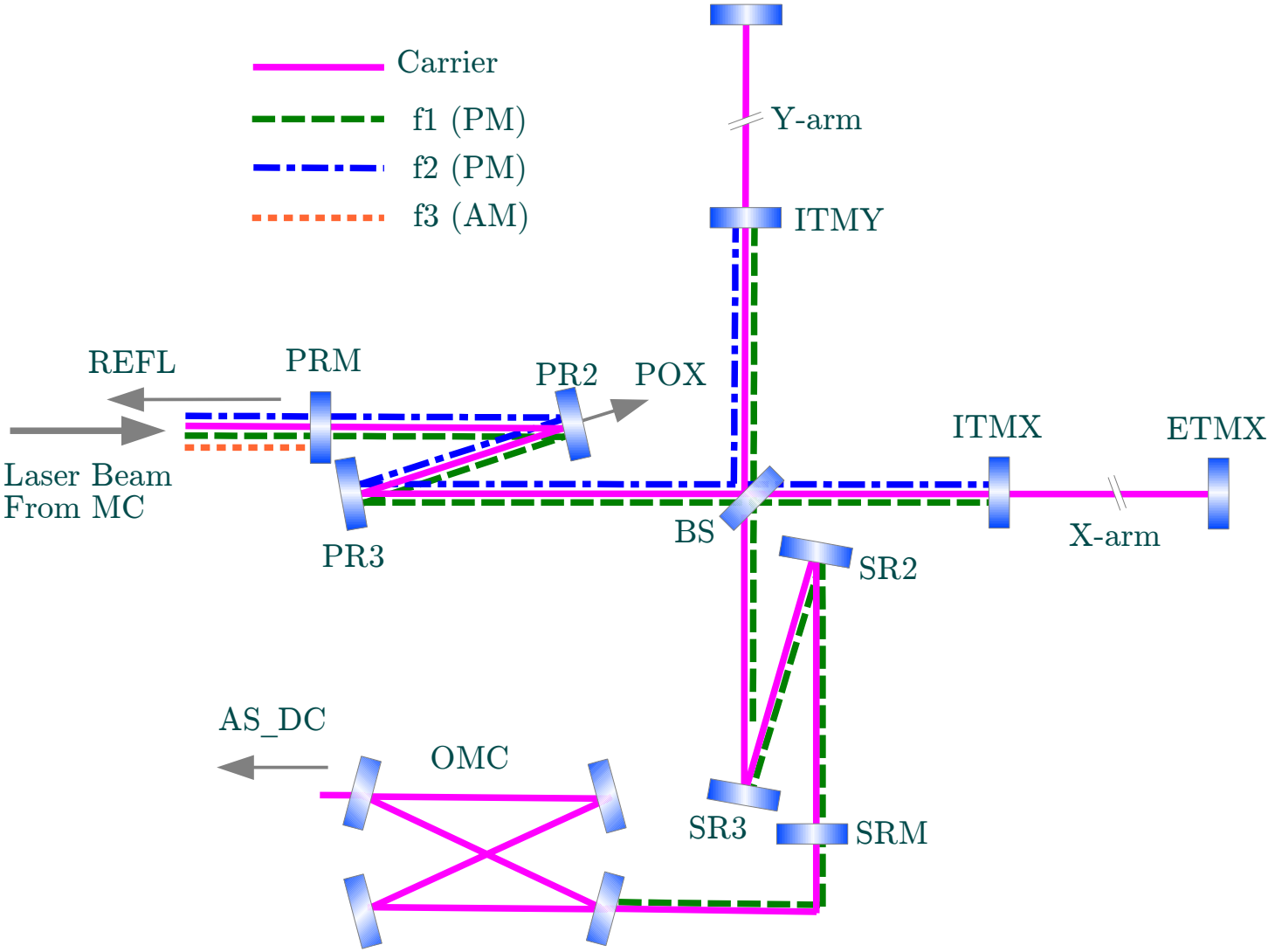

Design
Conceptual
Concrete
Implementation
Commissioning


Conceptual
Design
We Are Here
Concrete
Implementation
Commissioning

Sensitivity

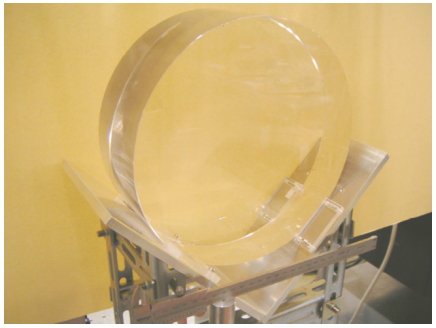
Signal Extraction

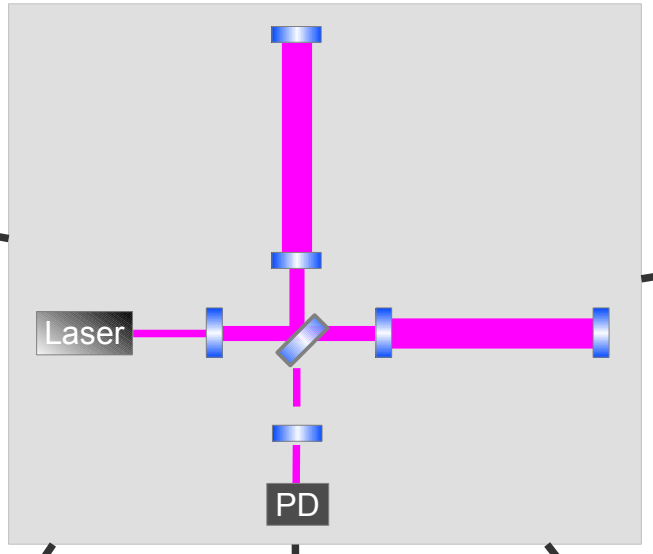
Interferometer Parameters



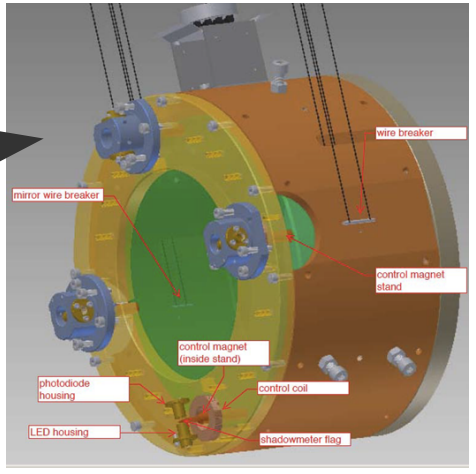
MIF

Mirror



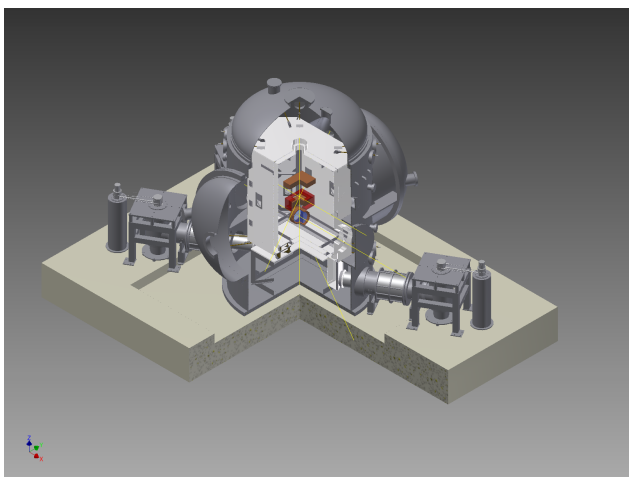


Vibration Isolation



Vacuum

Cryogenic



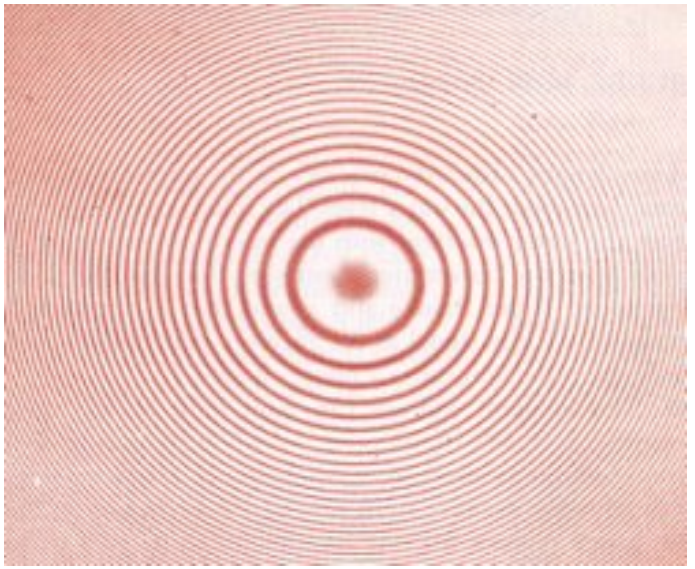
Laser

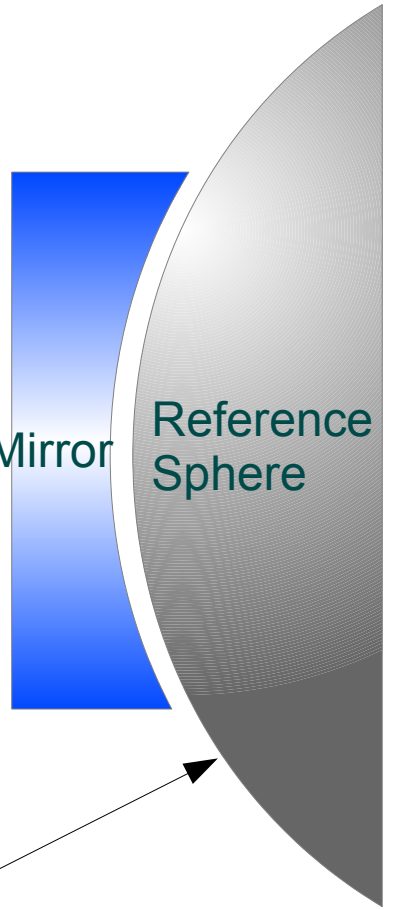
Radius of Curvature Changed !

1.68km - 1.87km

1.9km - 1.9km

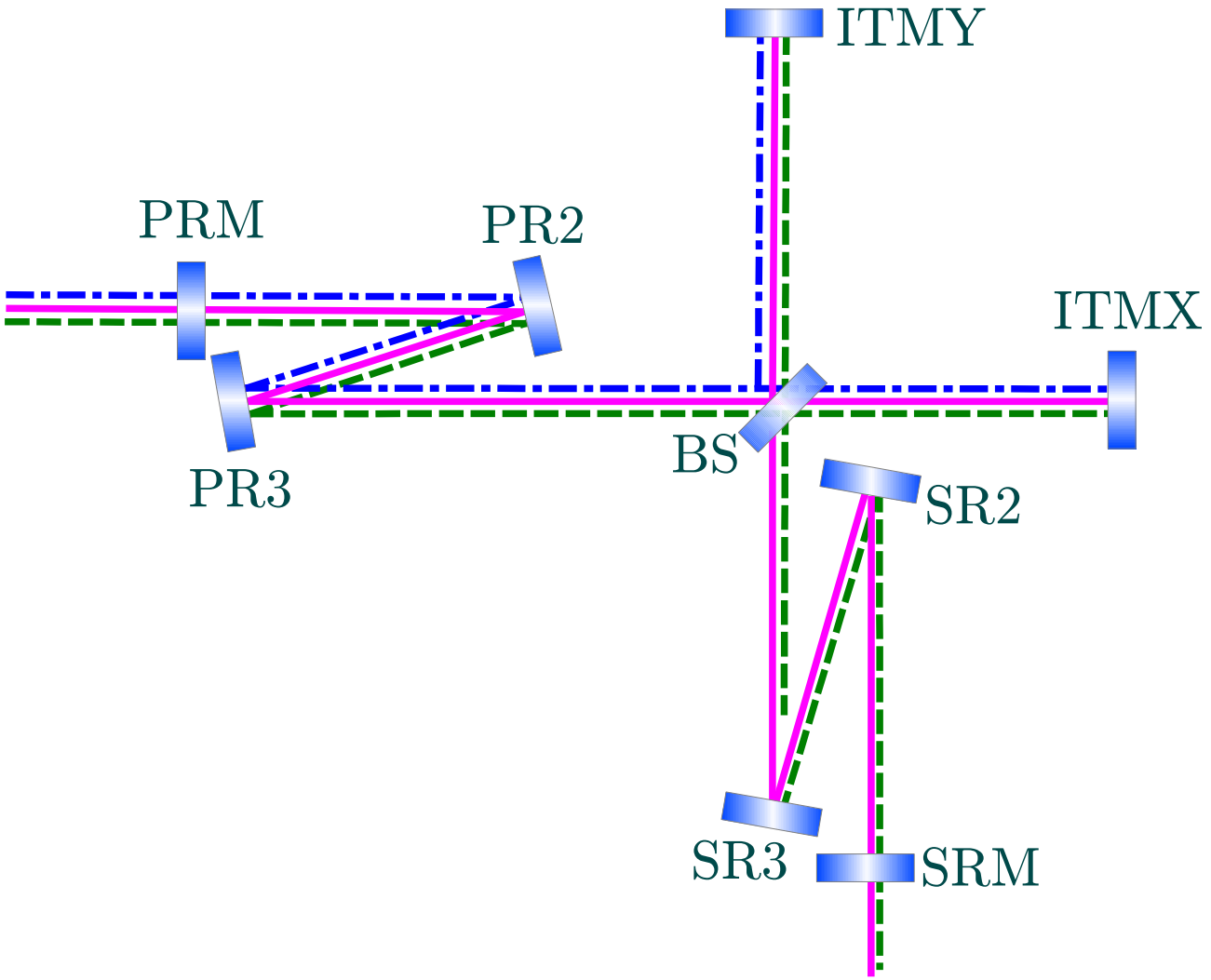
Newton Rings



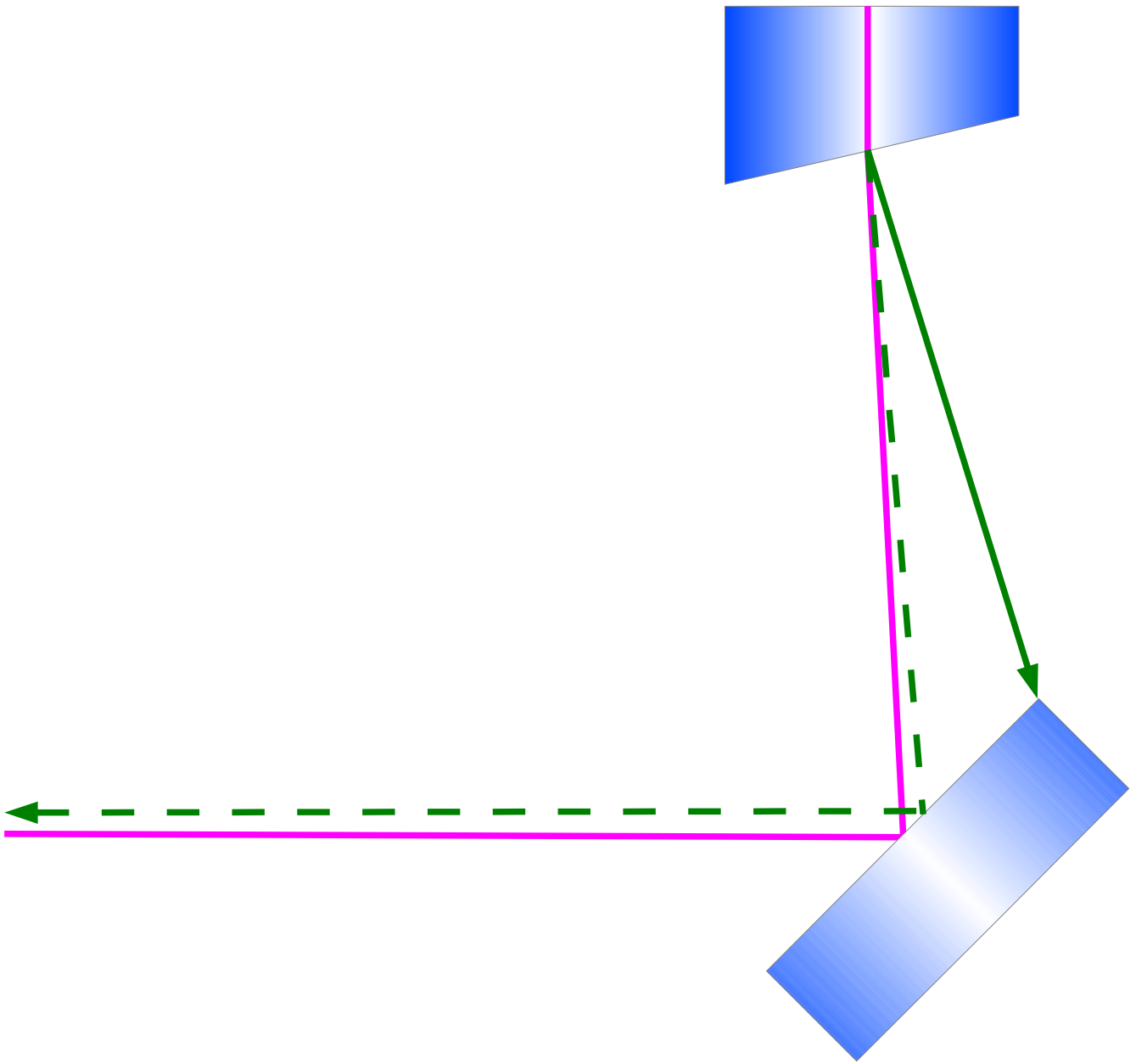


R=2100m (aLIGO)

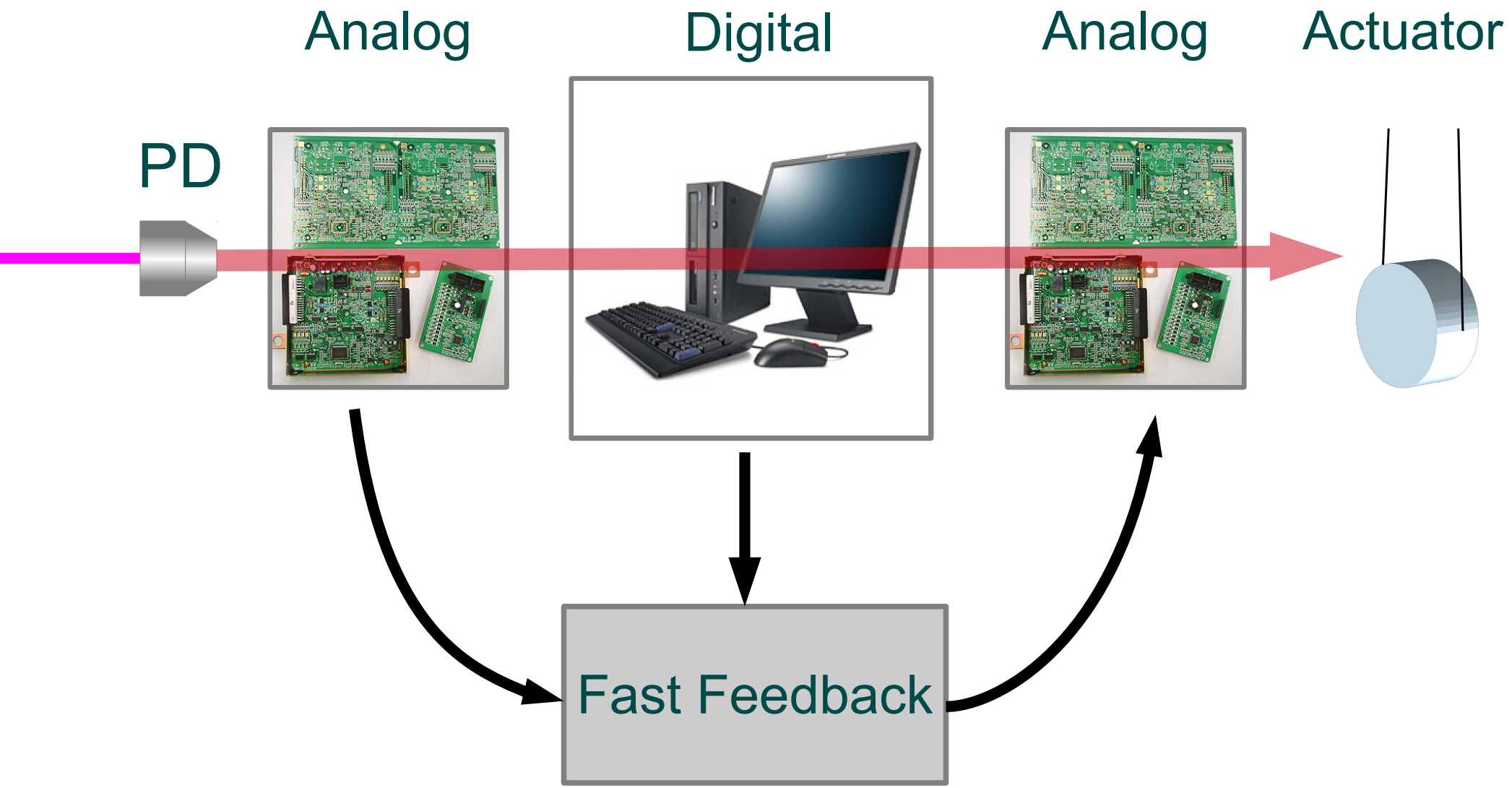
ROCs for PRC and SRC: now the same !



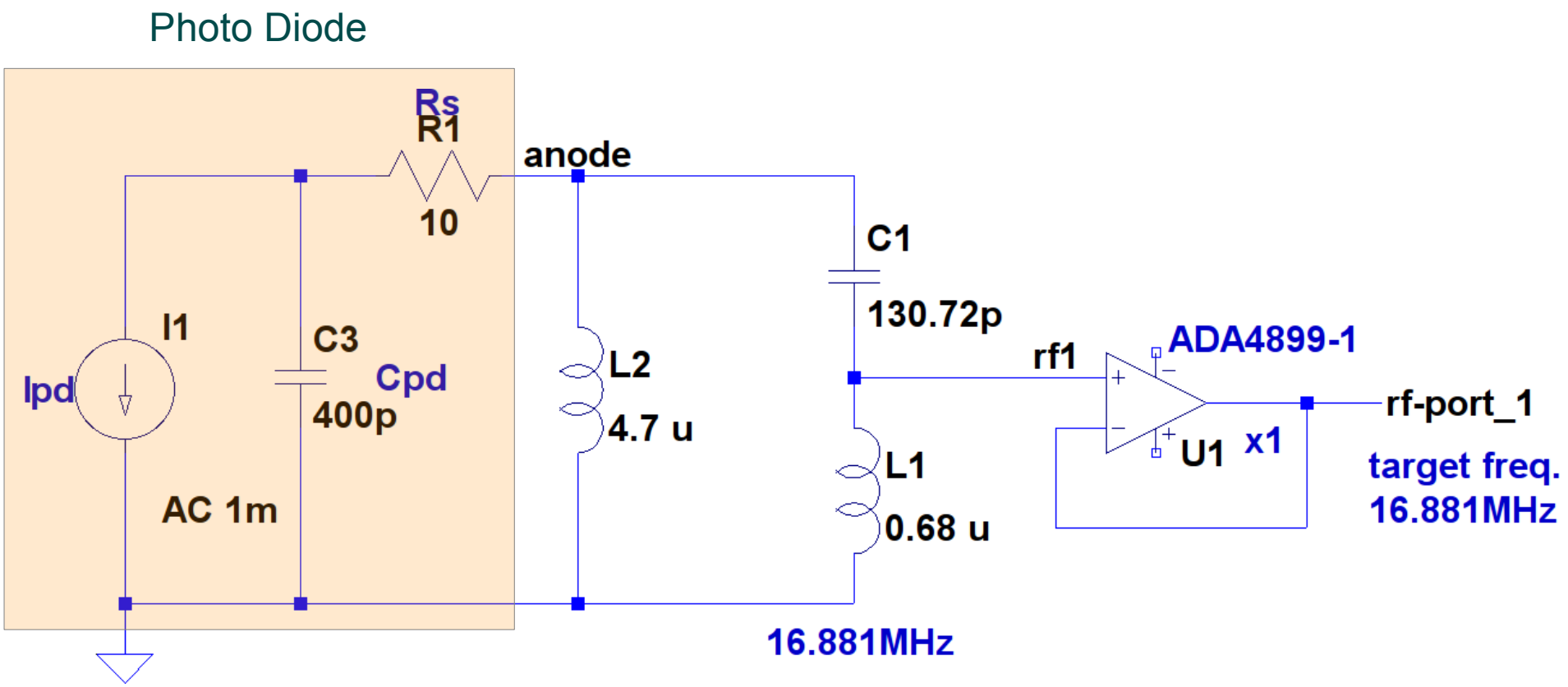
Large Wedge Angle is Not an Option



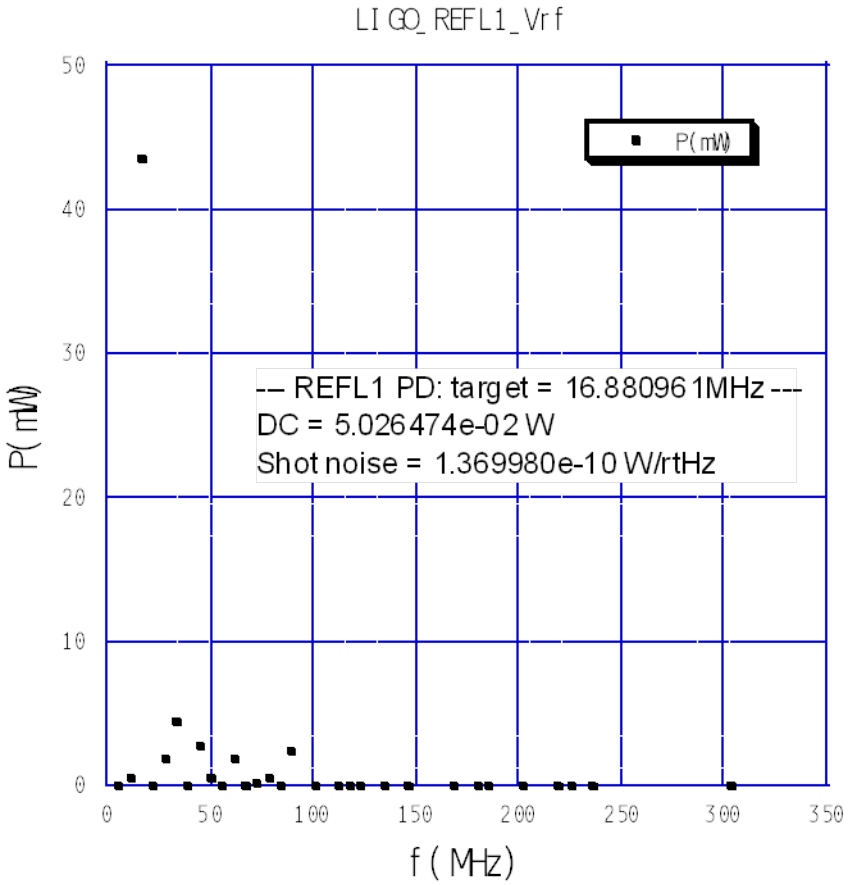

Analog
Digital
Analog
Actuator
PD


Analog
Digital
Analog
Actuator
PD
Fast Feedback

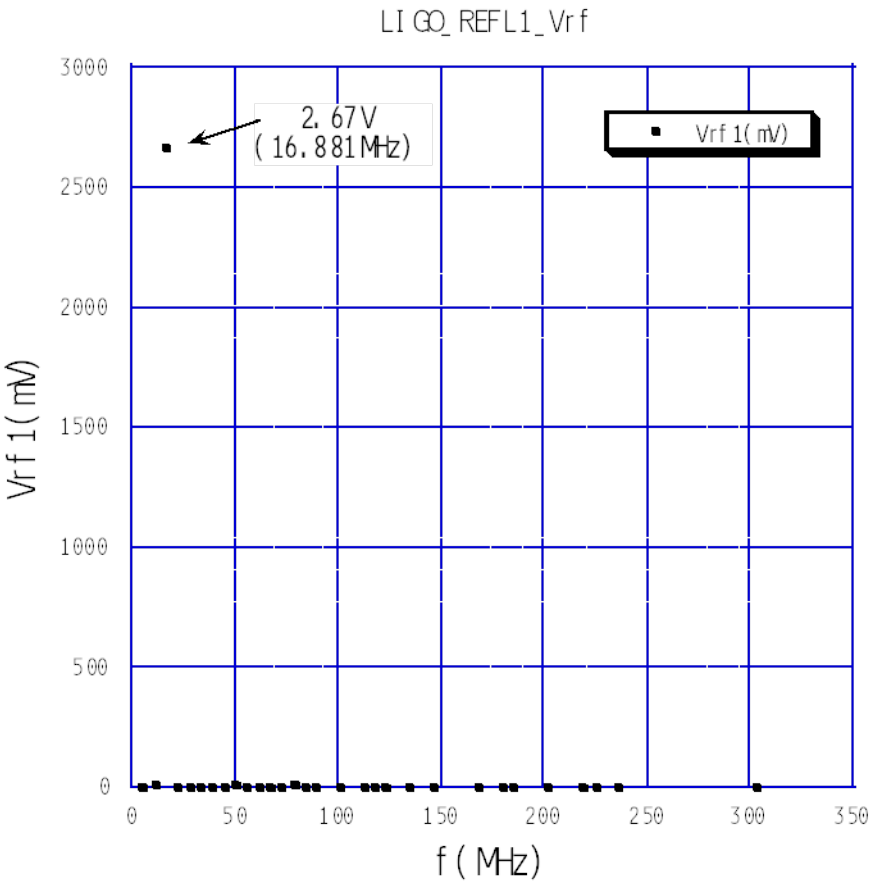
RF PD Design (Hiramatsu)

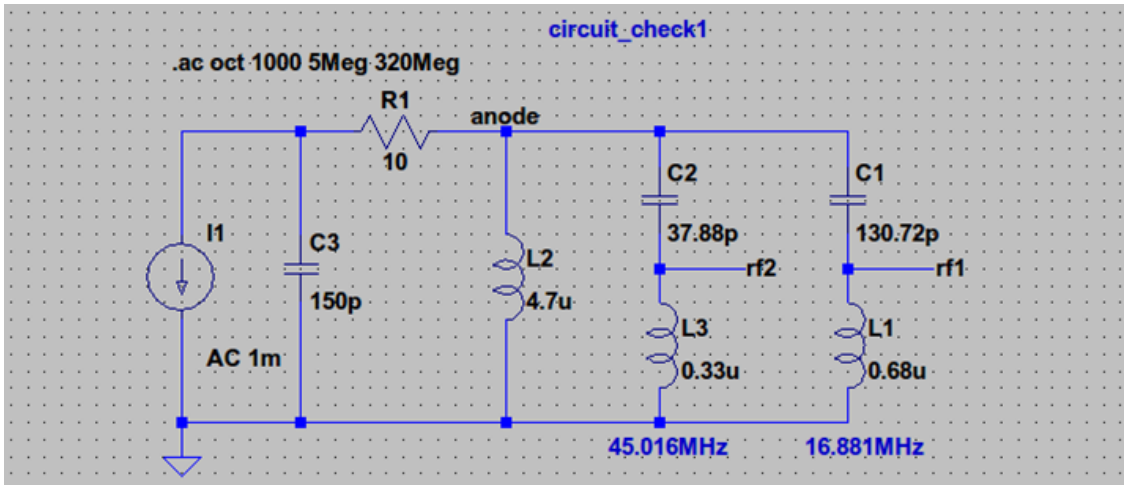


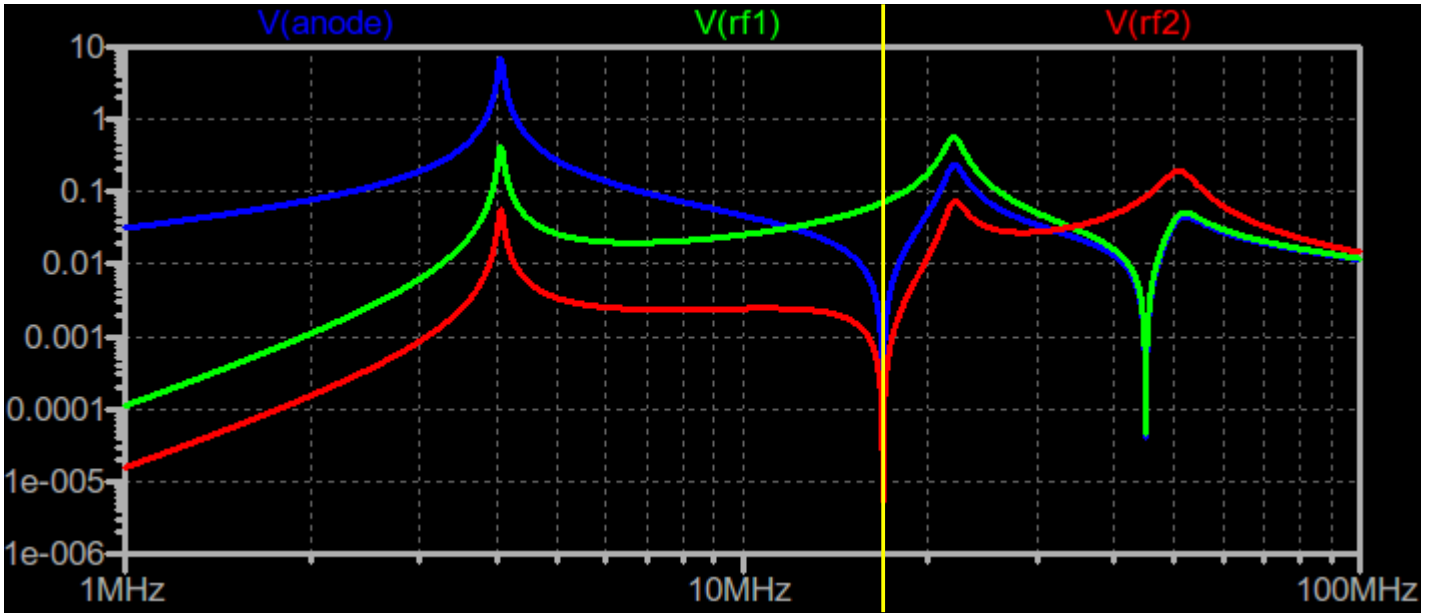
RF Power on the PD



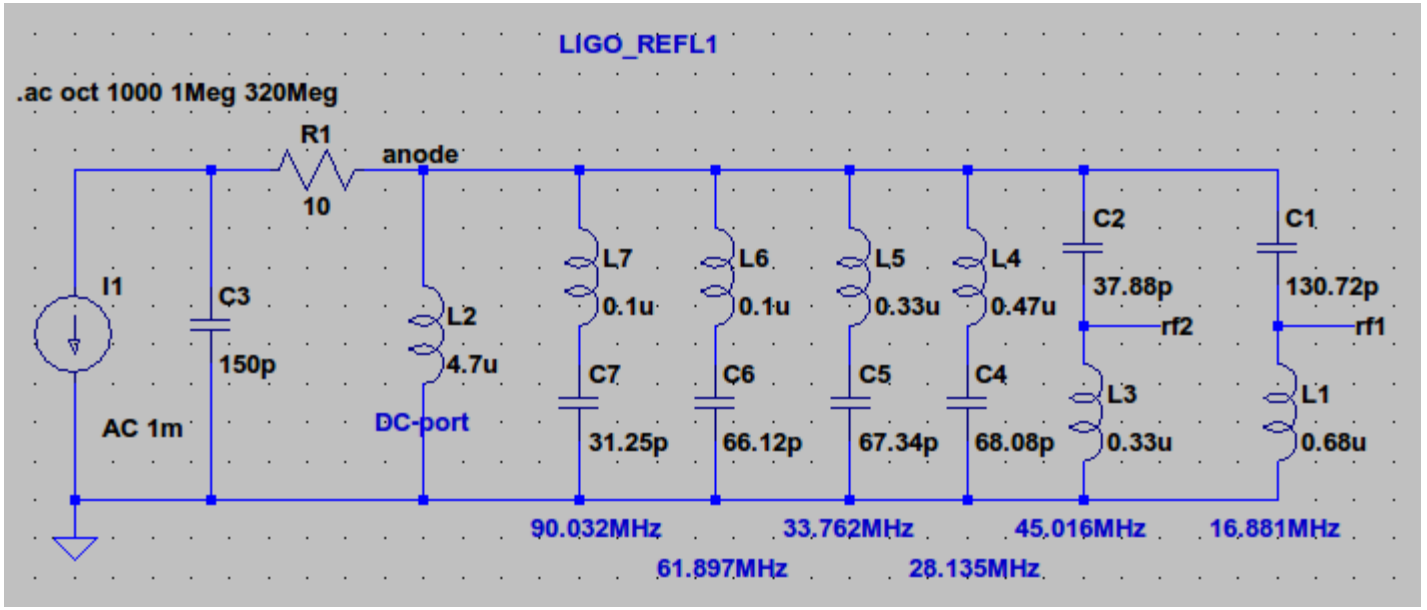
RF Power Output

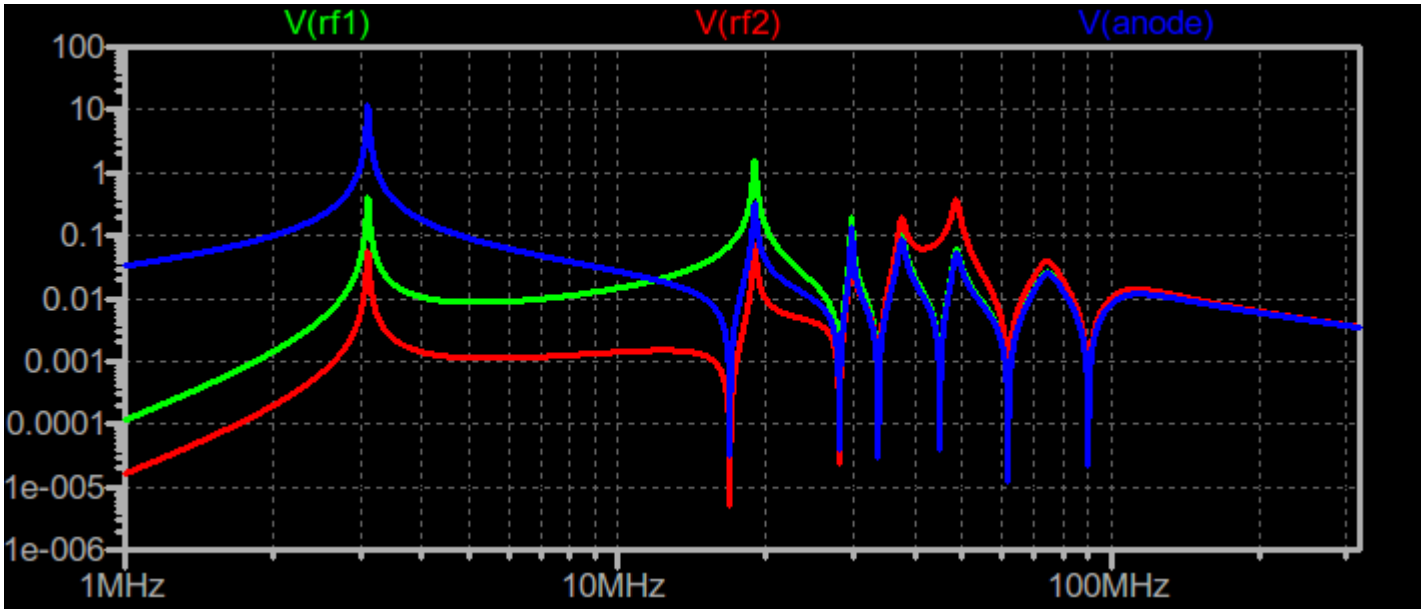



circuit_check1
.ac oct 1000 5Meg 320Meg
R1
10
anode
I1
AC 1m
C3
150p
L2
4.7u
C2
37.88p
rf2
L3
0.33u
C1
130.72p
rf1
L1
0.68u
45.016MHz
16.881MHz

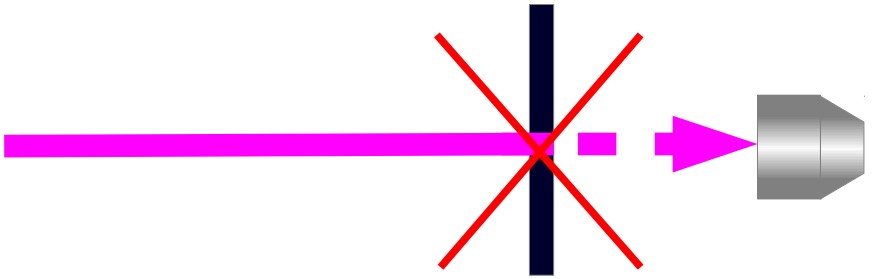

V(anode)
V(rf1)
V(rf2)
10
1
0.1
0.01
0.001
0.0001
1e-005
1e-006
1MHz
10MHz
100MHz

16.881MHz

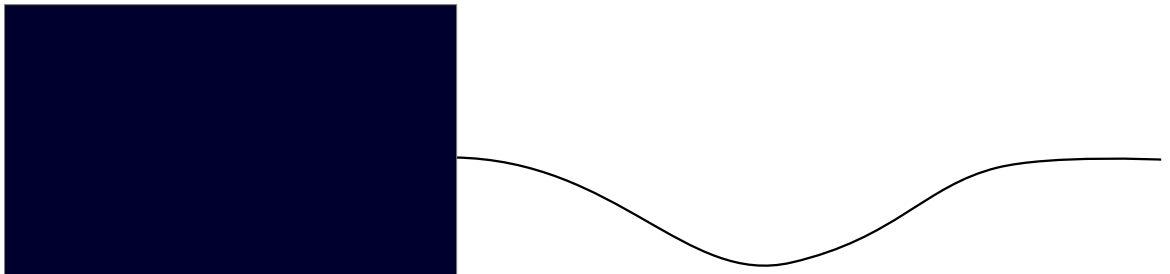

LIGO_REFL1
.ac oct 1000 1Meg 320Meg
R1
10
anode
I1
AC 1m
C3
150p
L2
4.7u
DC-port
L7
0.1u
C7
31.25p
L6
0.1u
C6
66.12p
L5
0.33u
C5
67.34p
L4
0.47u
C4
68.08p
C2
37.88p
rf2
L3
0.33u
C1
130.72p
rf1
L1
0.68u
90.032MHz
61.897MHz
33.762MHz
28.135MHz
45.016MHz
16.881MHz


V(rf1)
V(rf2)
V(anode)
100
10
1
0.1
0.01
0.001
0.0001
1e-005
1e-006
1MHz
10MHz
100MHz

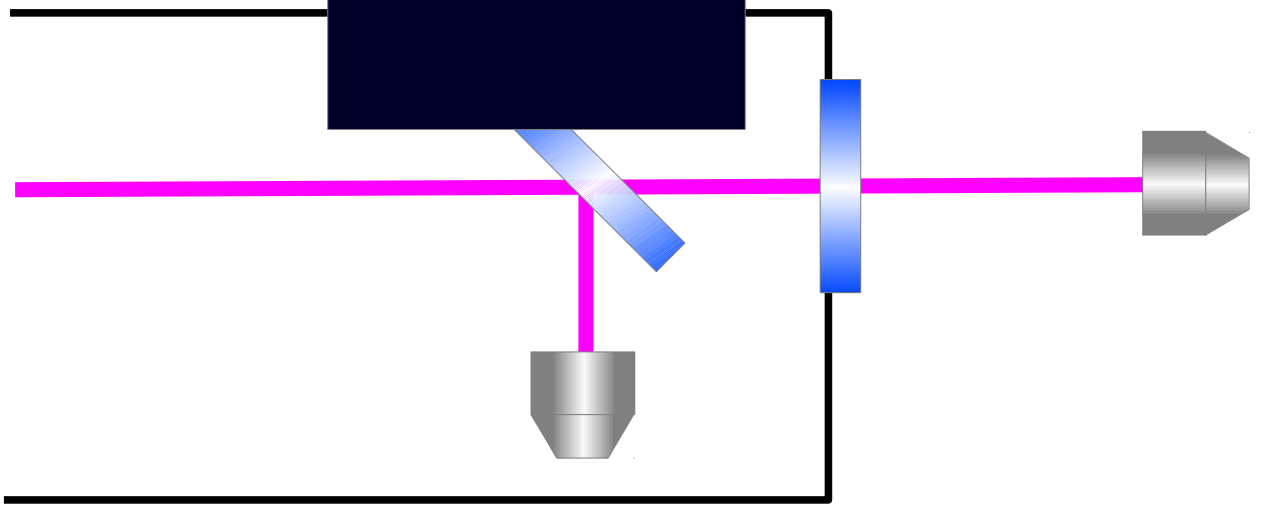
Fast Beam Shutter (Somiya, Akutsu)



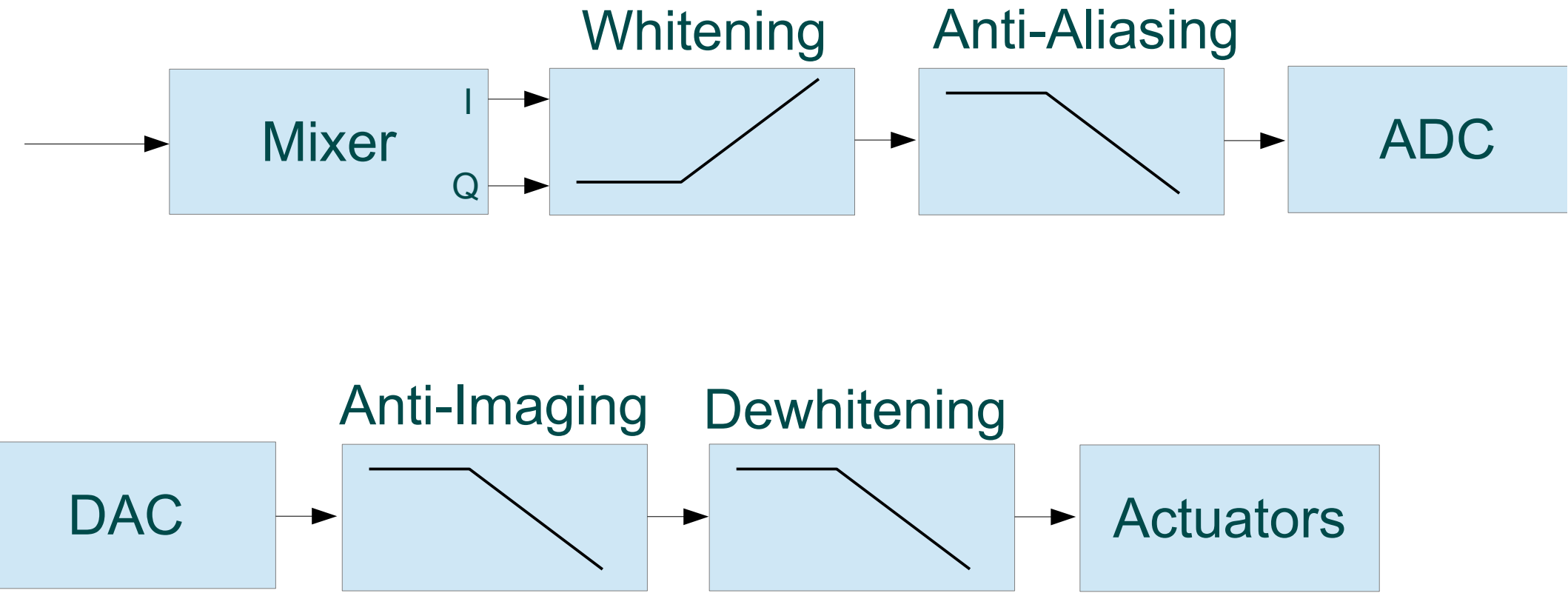
In-Vacuum PD (Akutsu, Yamamoto)



Close in-air PD (Akutsu

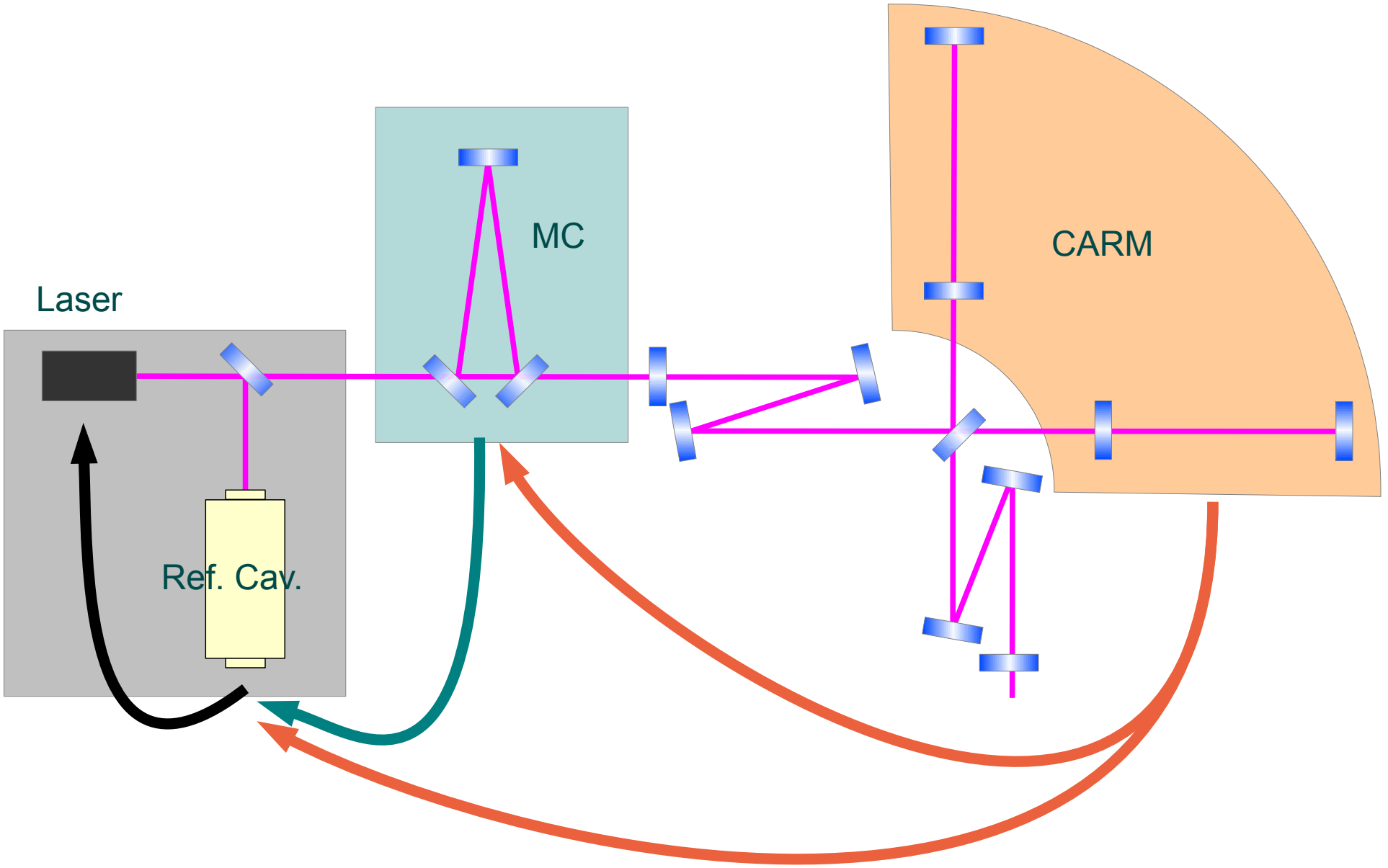


Front end analog circuits (Aso)

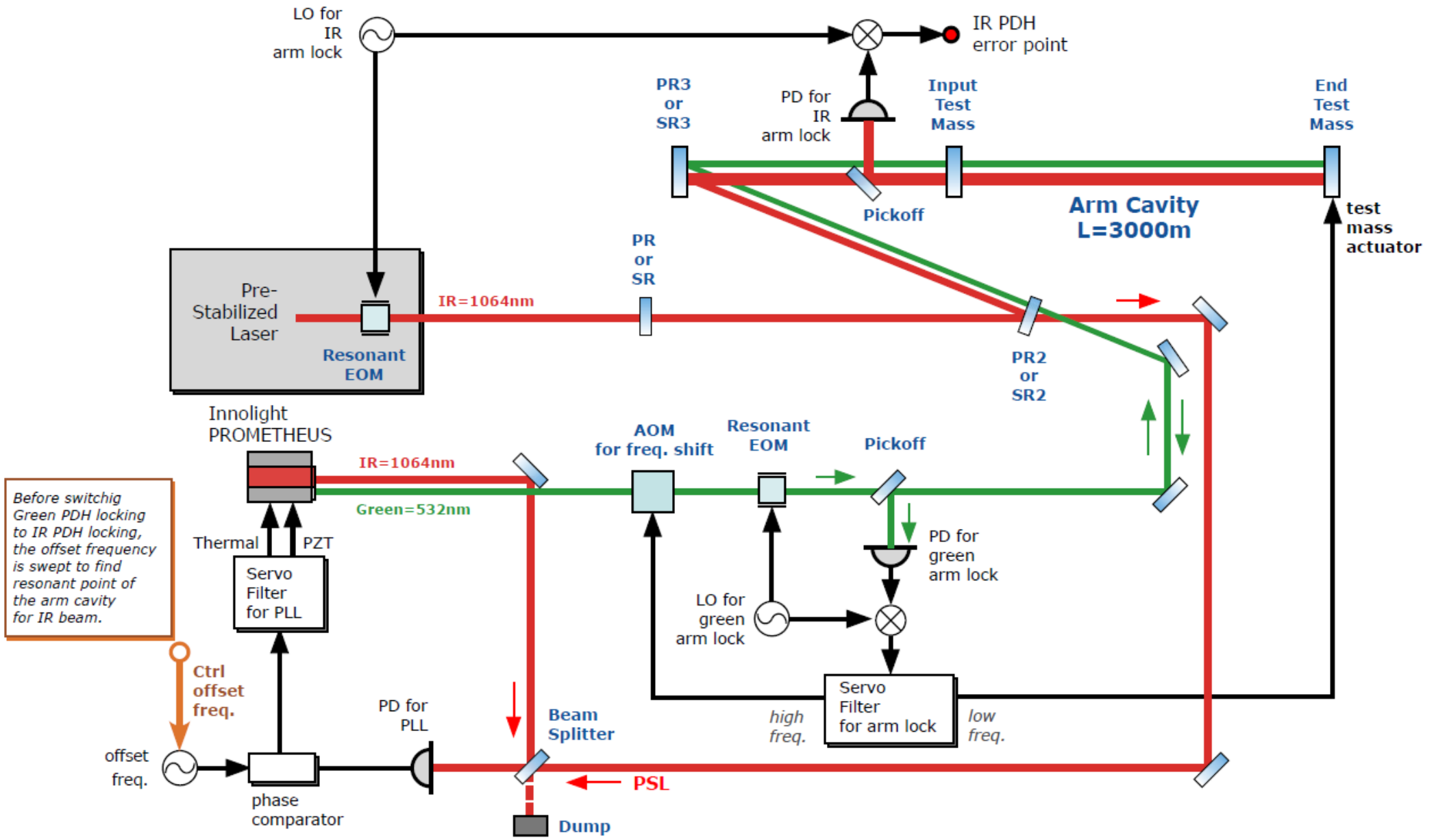


RTS coding (Miyakawa, Students)

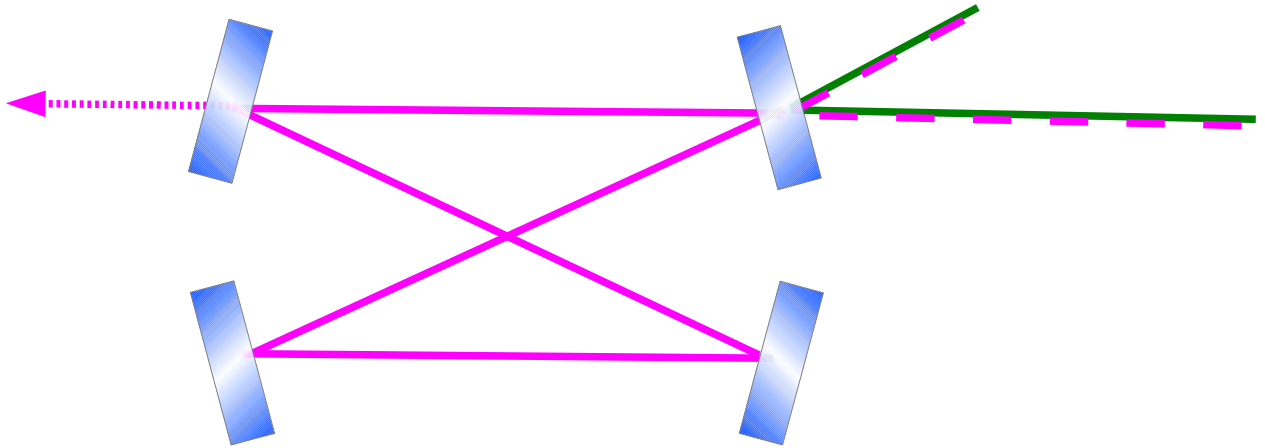
Frequency Stabilization Servo (NAOJ)



Green lock (NAOJ)



OMC



Somiya, Arai, Michimura

Commissioning Planning (Aso)

ID	タスク名	期間
64	**Change Suspensions**	**376日**
65	ETM	3月
66	ITM	3月
67	Aux. Mirrors	4.5月
68	**Room Temp. RSE**	**481日**
69	Silica DR Interferometer	4月
70	PRMI	1月
71	DRMI	1月
72	RSE	6月
73	Cryogenic RSE	6月
74	First Science Run	1月
75	IFO Tuning	5月
76	Observation	365日