# ISC meeting

2021年6月28日

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<span style="color:red">Purpose</span>
<span style="color:red">To introduce ASC of input mode cleaner</span>

Perform analysis calculation and Finesse simulation

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Compare with actual measurement values

# Analysis calculation of IMC_ASC

| | | |
|---|---|---|
| （Yaw） | Move the flat mirror to in-phase | b_p |
| | Move the flat mirror to differential. | b_m |
| | Move end mirror | b_b |
| （Pitch） | Move the flat mirror to in-phase | a_p |
| | Move the flat mirror to differential. | a_m |
| | Move end mirror | a_b |

View the signal in reflected power (REFL_WFS) and transmitted power (IMMT_TRANS, MCe_TRANS)
when the mirror is moved in **6 patterns**.

Signal separation of the six patterns of motion at the position of the QPD（by Gouy phase）.
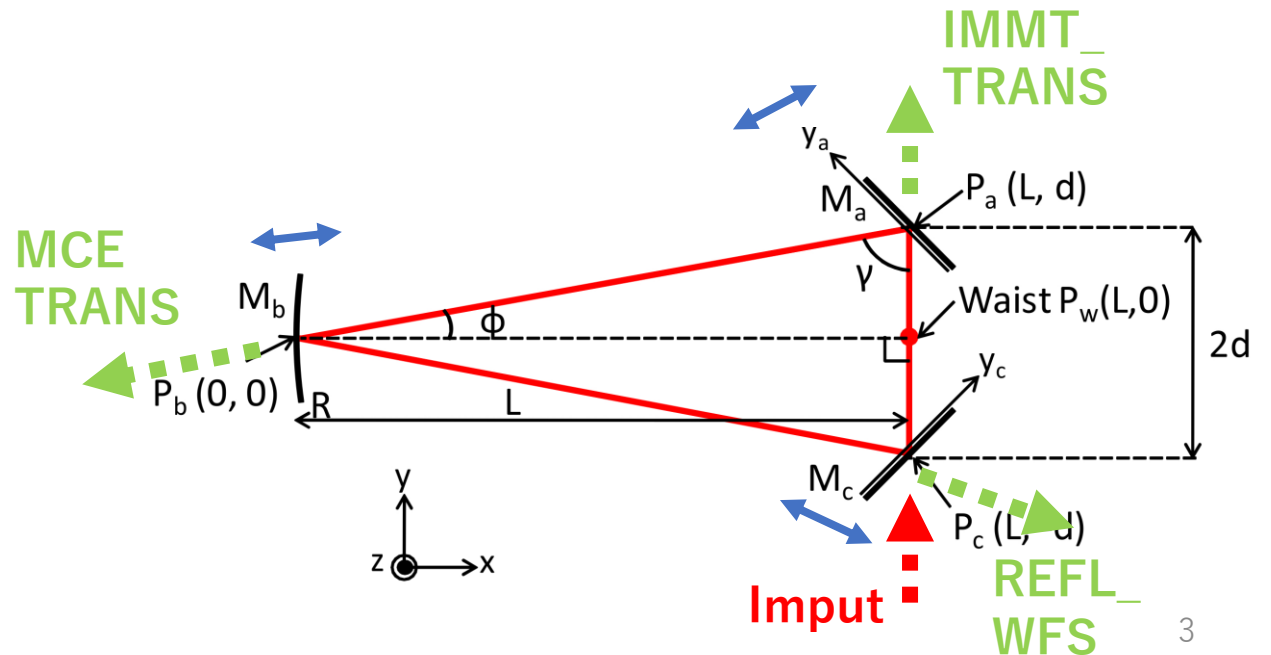
# REFL_WFS

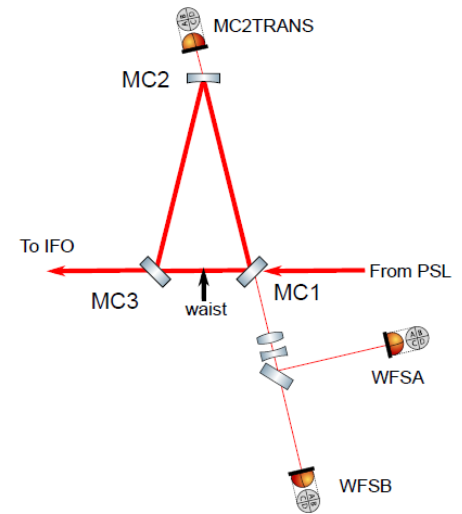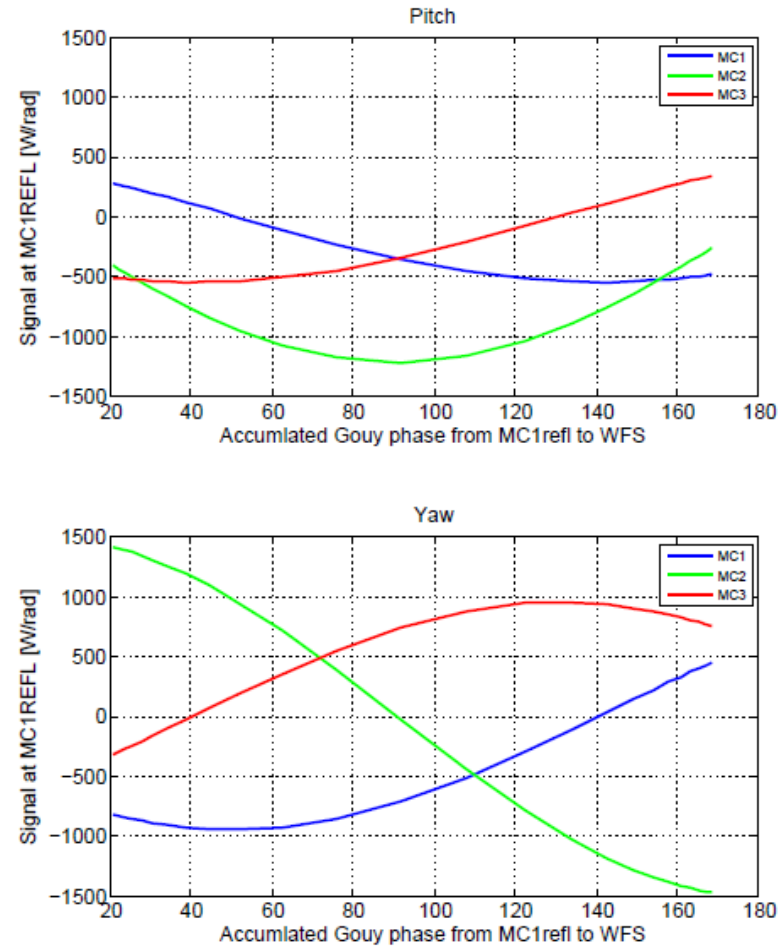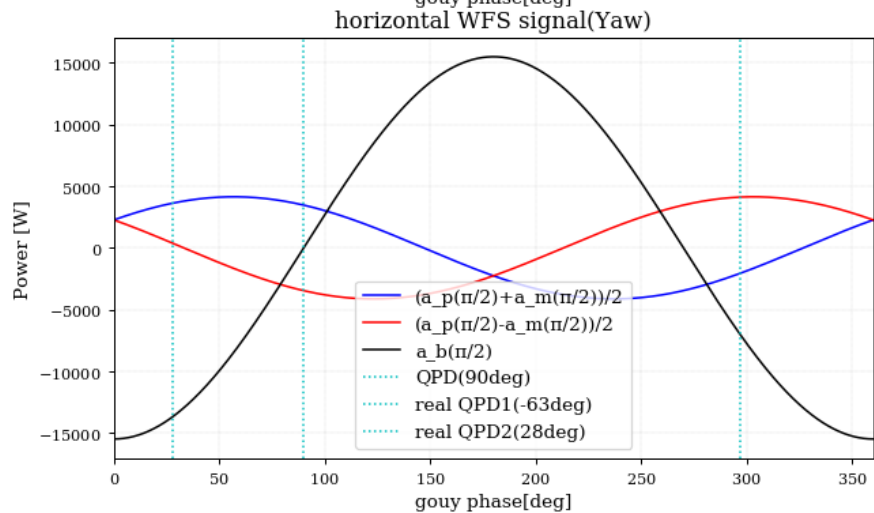Moving each mirror

My analysis calculation **VS** Analysis calculation of LIGO paper
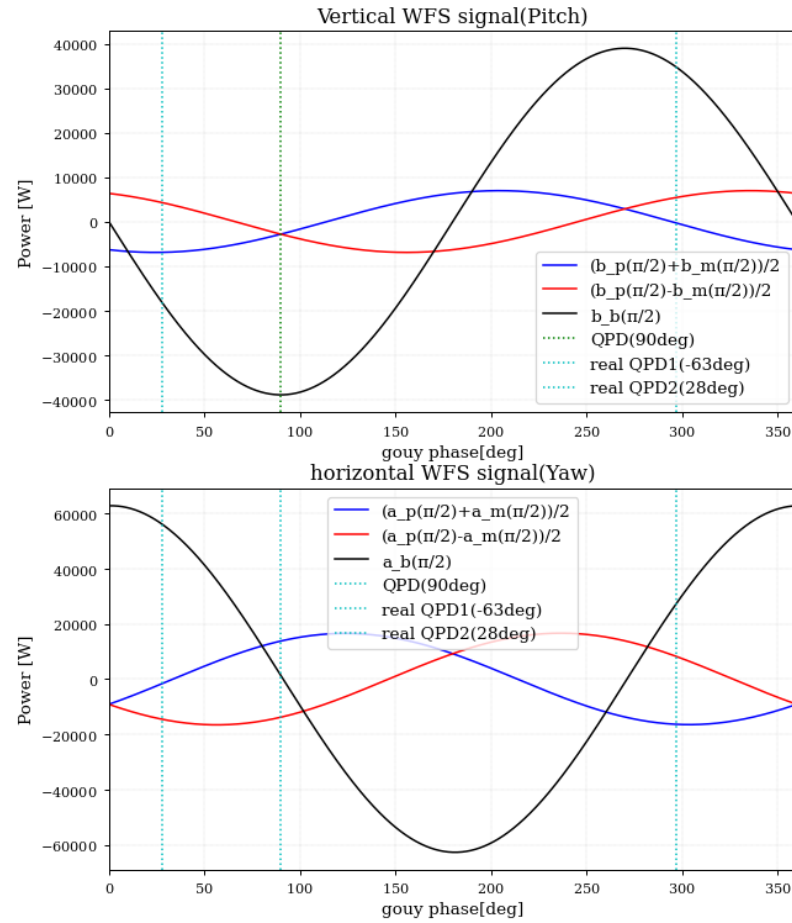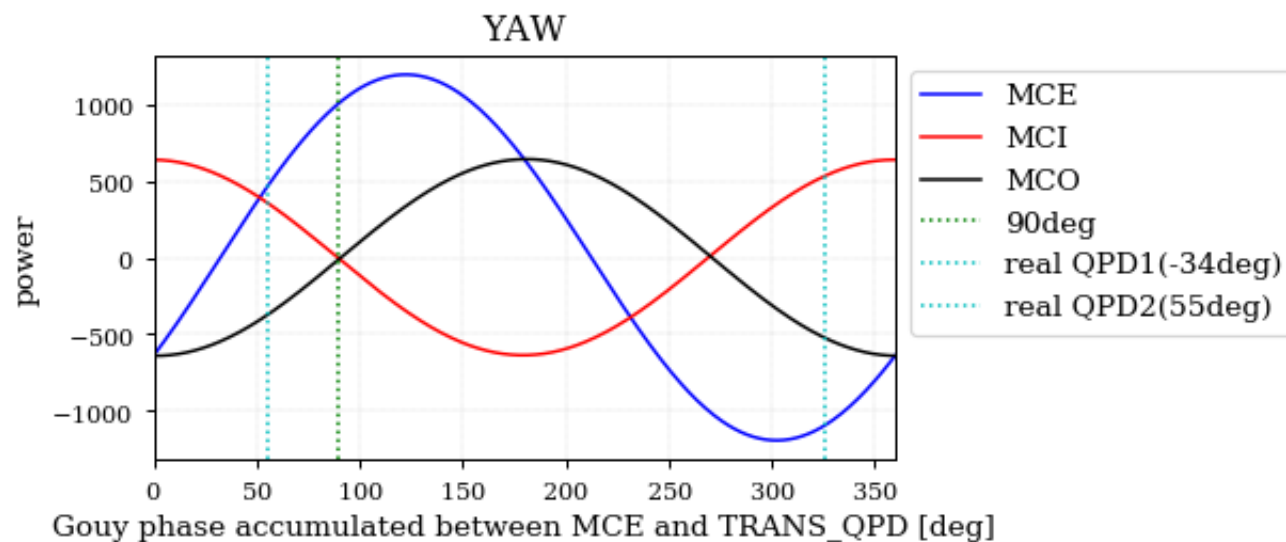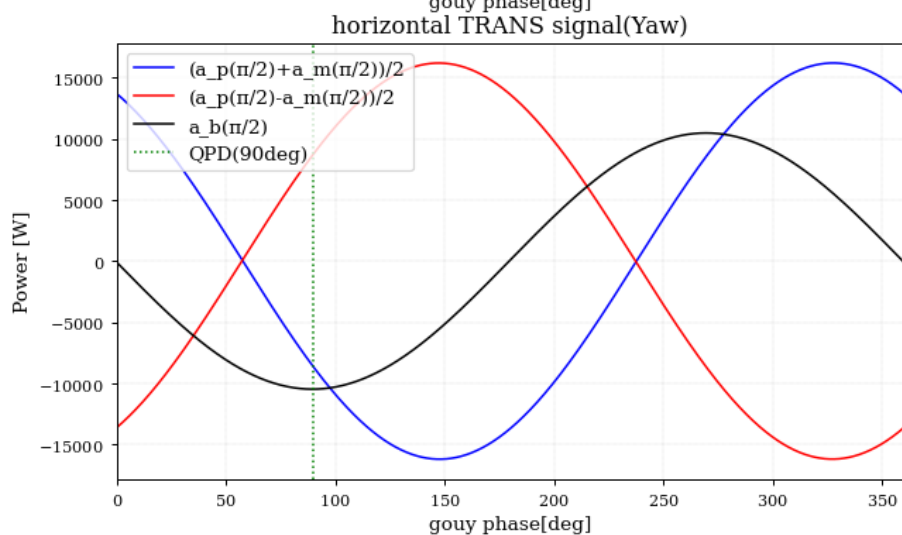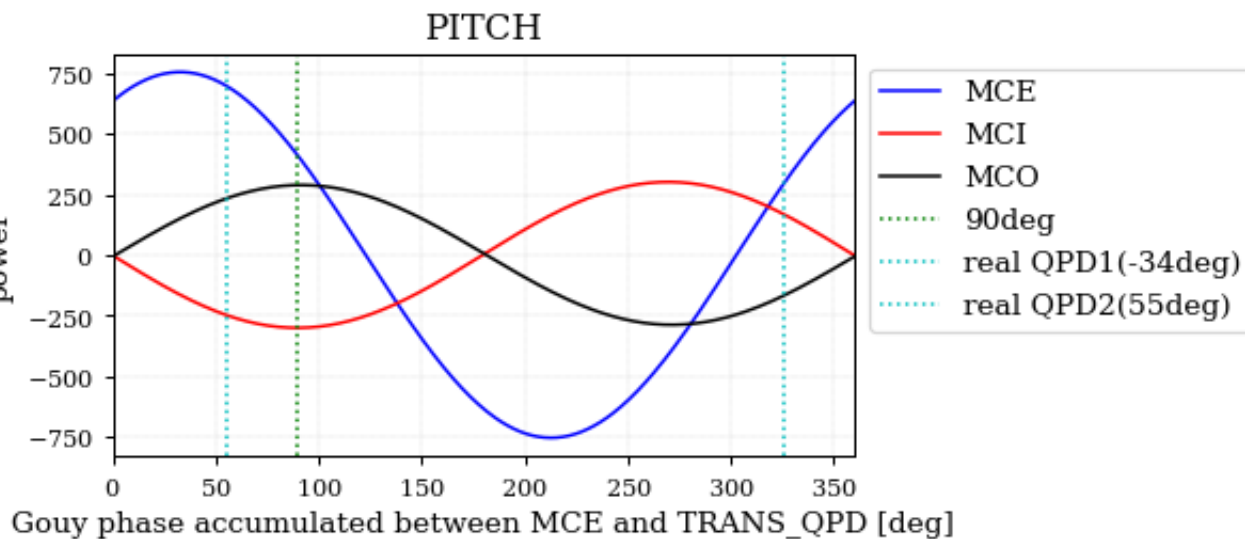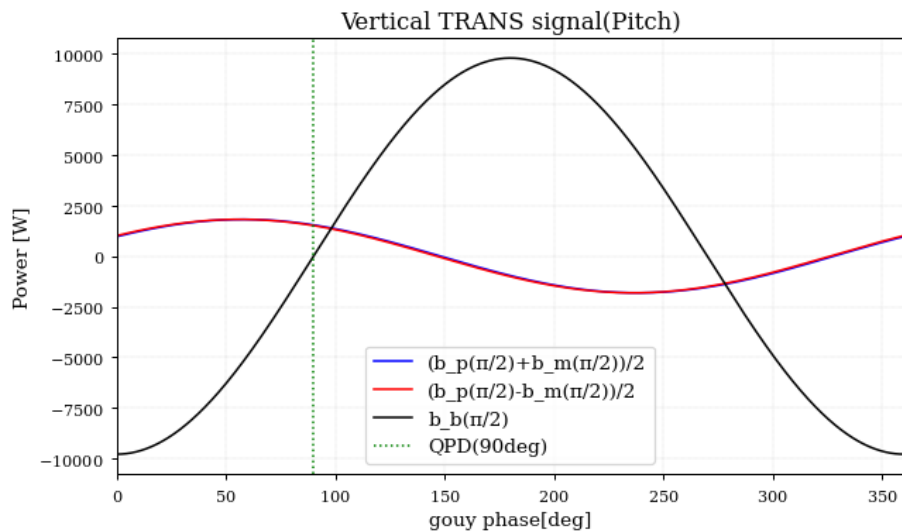


**Matches the LIGO setting.**
Added and Subtracted the differential and
in-phase movements of the flat mirror.

# REFL_WFS

Moving each mirror

**Finesse simulation is shift Gooey phase.**

My analysis calculation    VS    simulation

# MCe TRANS

Moving each mirror    **VS**    **Finesse simulation is shift Gooey phase.**

My analysis calculation          simulation

Moving each mirror  **Finesse simulation is shift Gooey phase.**
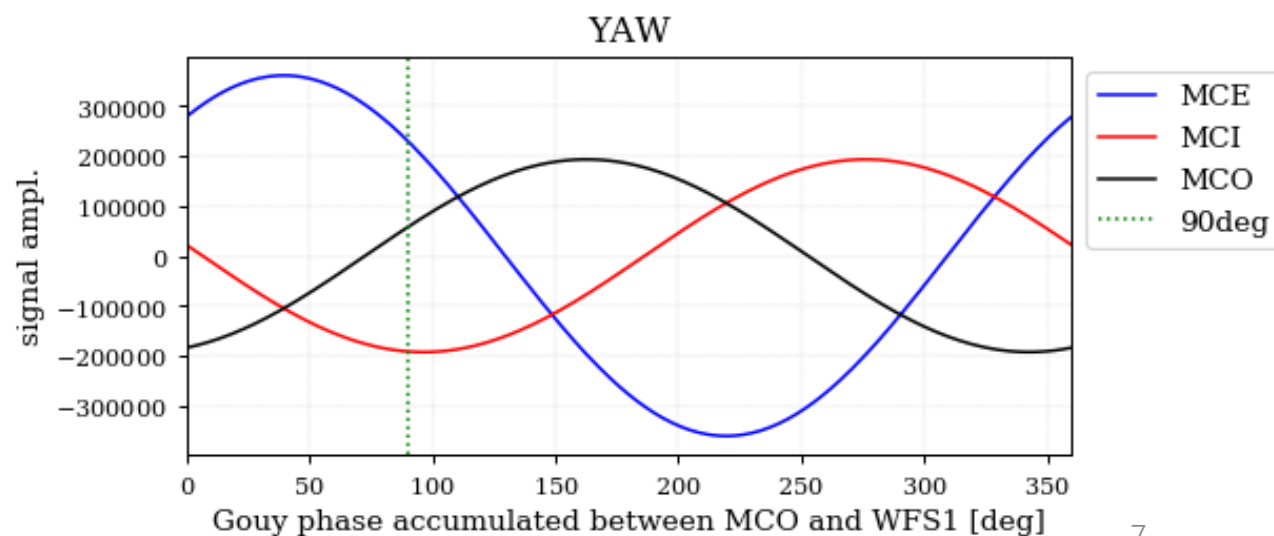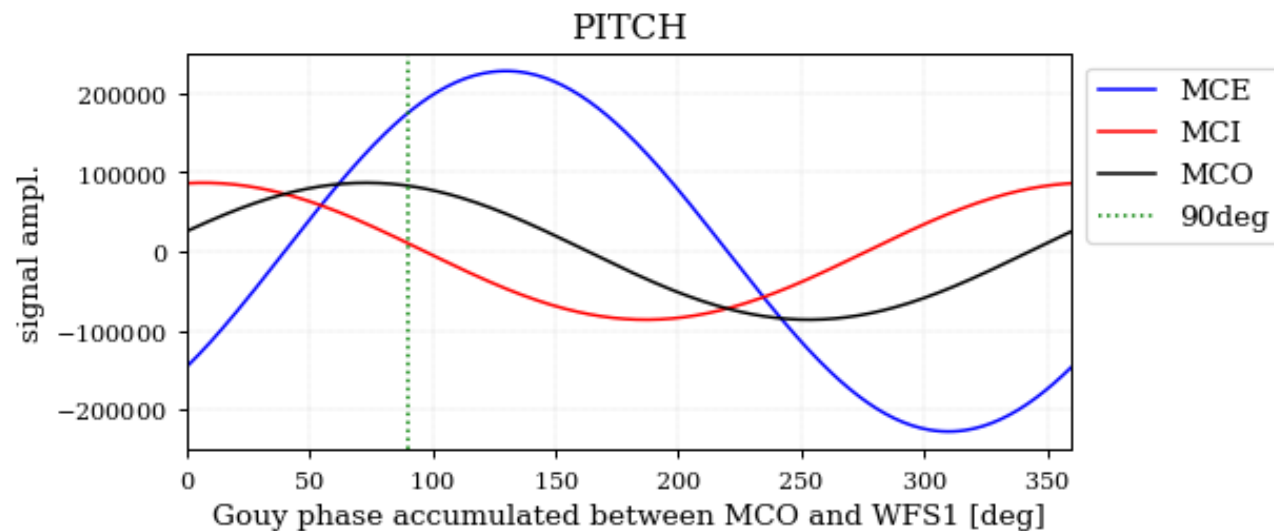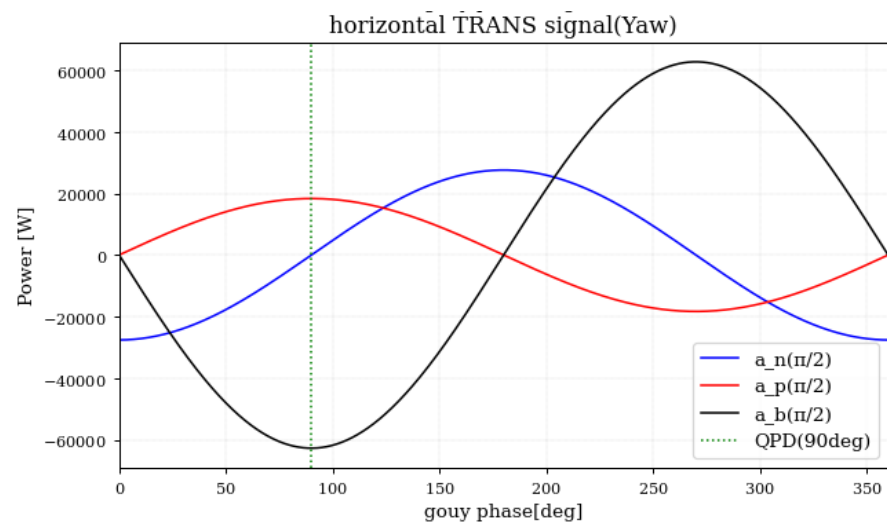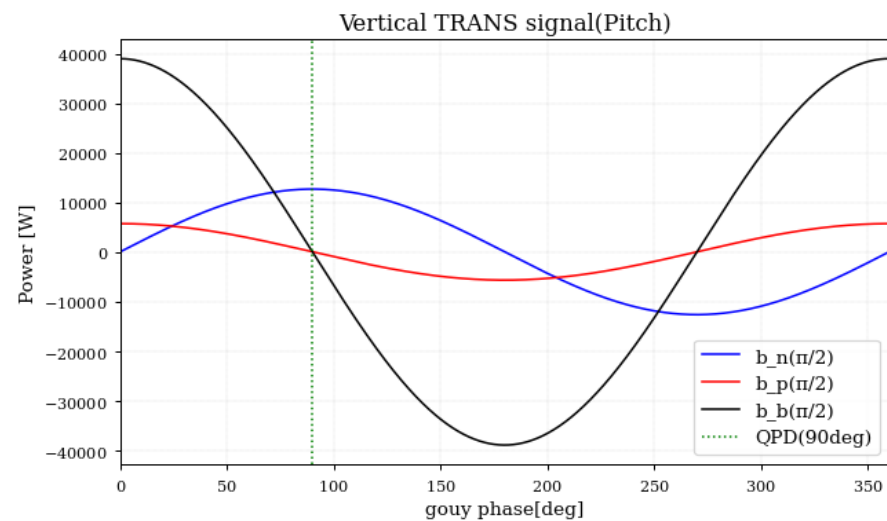
My analysis calculation  **VS**  simulation

# actual measurement values

| | MCi_pitch | MCe_yaw | MCo_yaw | MCi_yaw |
|---|---|---|---|---|
| REFLQPD1 (-63deg) | -3.767e-06 | 3.23e-06 | 3.216e-07 | -9.258e-07 |
| REFLQPD2 (28deg) | 3.73e-06 | 5.135e-07 | 2.0607e-06 | -6.546e-07 |
| MCeQPD1 | -2.0881e-09 | 2.25e-10 | 1.196e-10 | -6.966e-11 |
| MCeQPD2 | 5.935e-10 | 1.767e-10 | -1.4245e-10 | 7.200e-11 |
| IMMT1QPD1 | -2.128e-09 | -1.232e-10 | 3.823e-10 | -1.157e-10 |

The table is incomplete.

REFL my analysis calculation
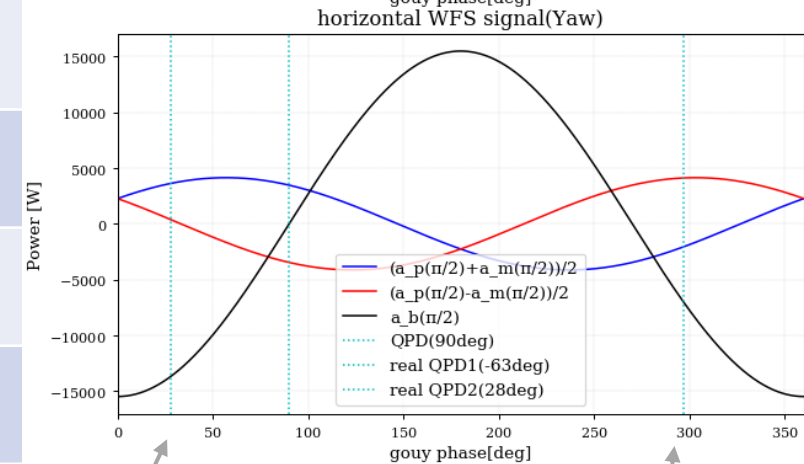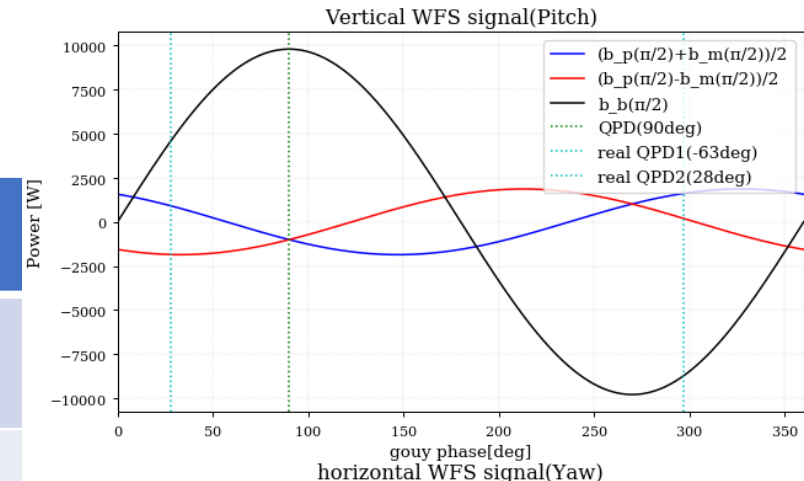


REFLQPD1 (28deg)

REFLQPD1 (-63deg)