Main Interferometer Subsystem
Overview

Yoichi Aso
KAGRA F2F Meeting
2015/2/5

MIF Active Members

Chief: Yoichi Aso (NAOJ)

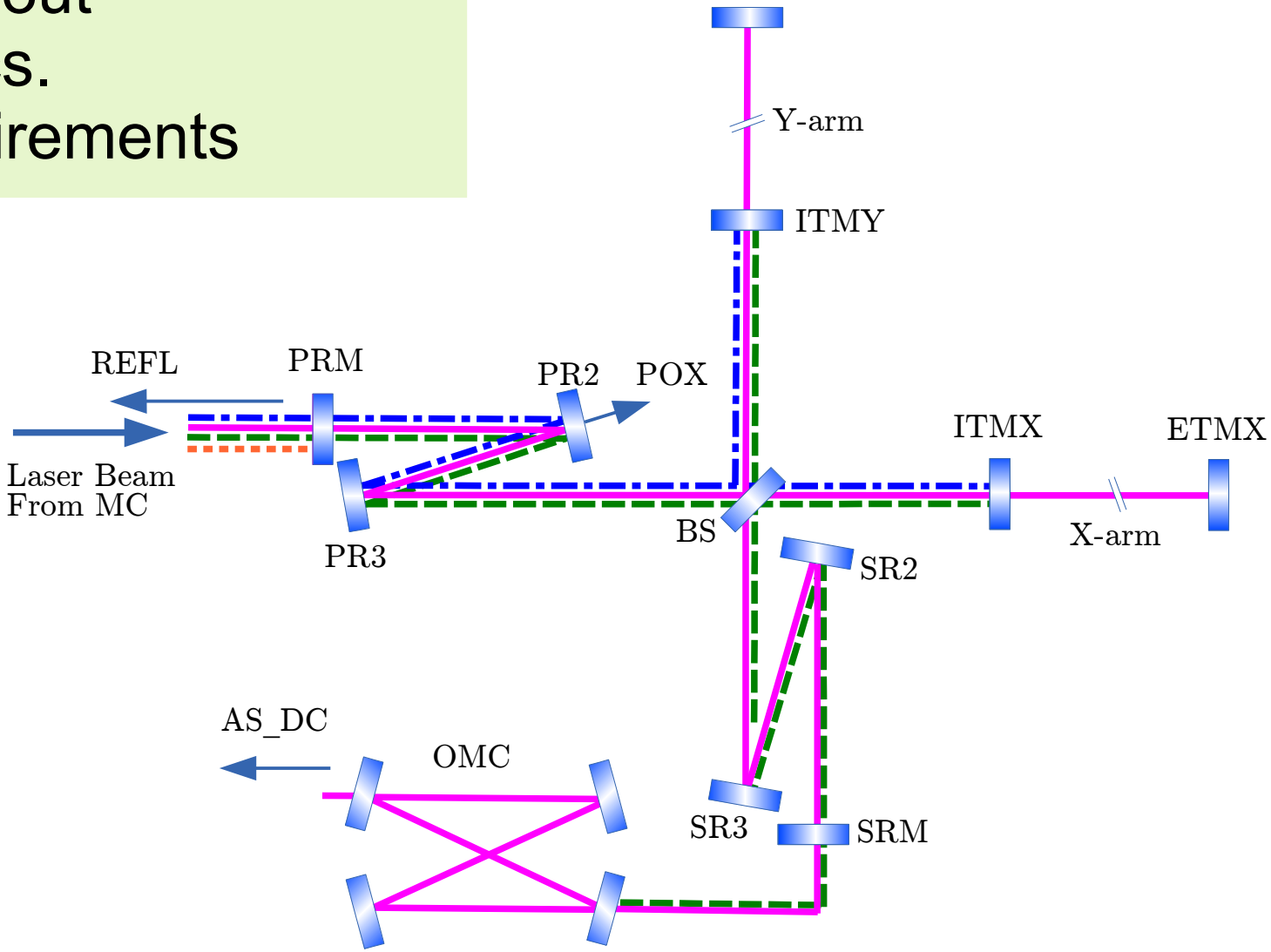
Sub-Chief: Yuta Michimura (UT)

Nakano (ICRR)

Saito (Niigata)

What have we done so far ?

- Optical Design
- Signal Extraction Scheme
- Optical Layout
- Mirror specs.
- Noise requirements



Things to be prepared before the installation begins

(for iKAGRA)

For Control

- Detailed servo design
- Analog Circuits
- (RFPD, DCPD, RFQPD, DCQPD, Demodulator, Whitening Filter, RF Distribution, CARM servo board, MC servo board)
- Realtime code

For light detection

- Optical layout for detection benches
- Beam Shutters (?)
- Optical tables for detection benches (IOO)
- Miscellaneous small optics (mirrors, holders, lenses, polarizers, etc) (IOO)

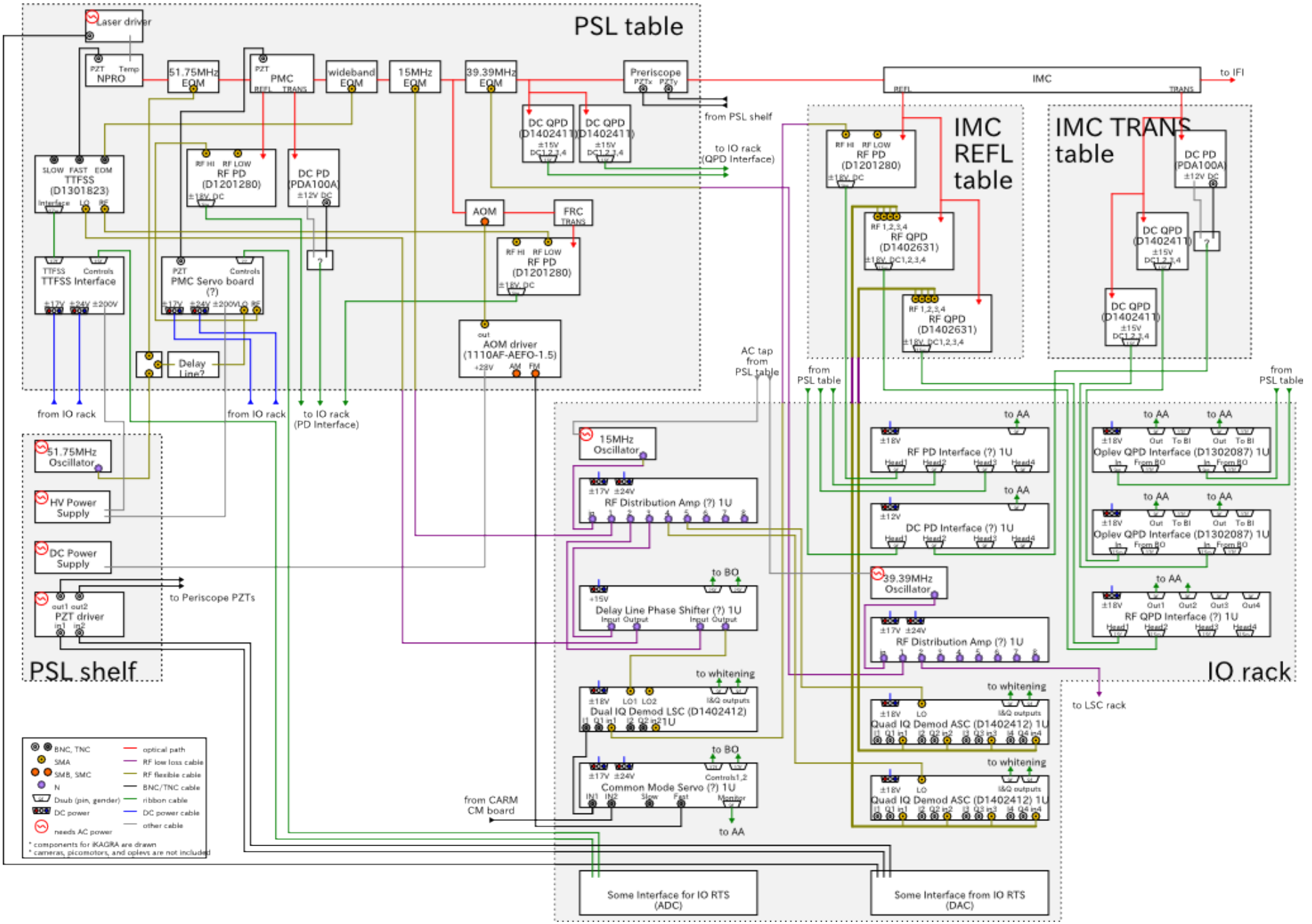
Recent activities

Focusing on electronics necessary to lock the interferometer

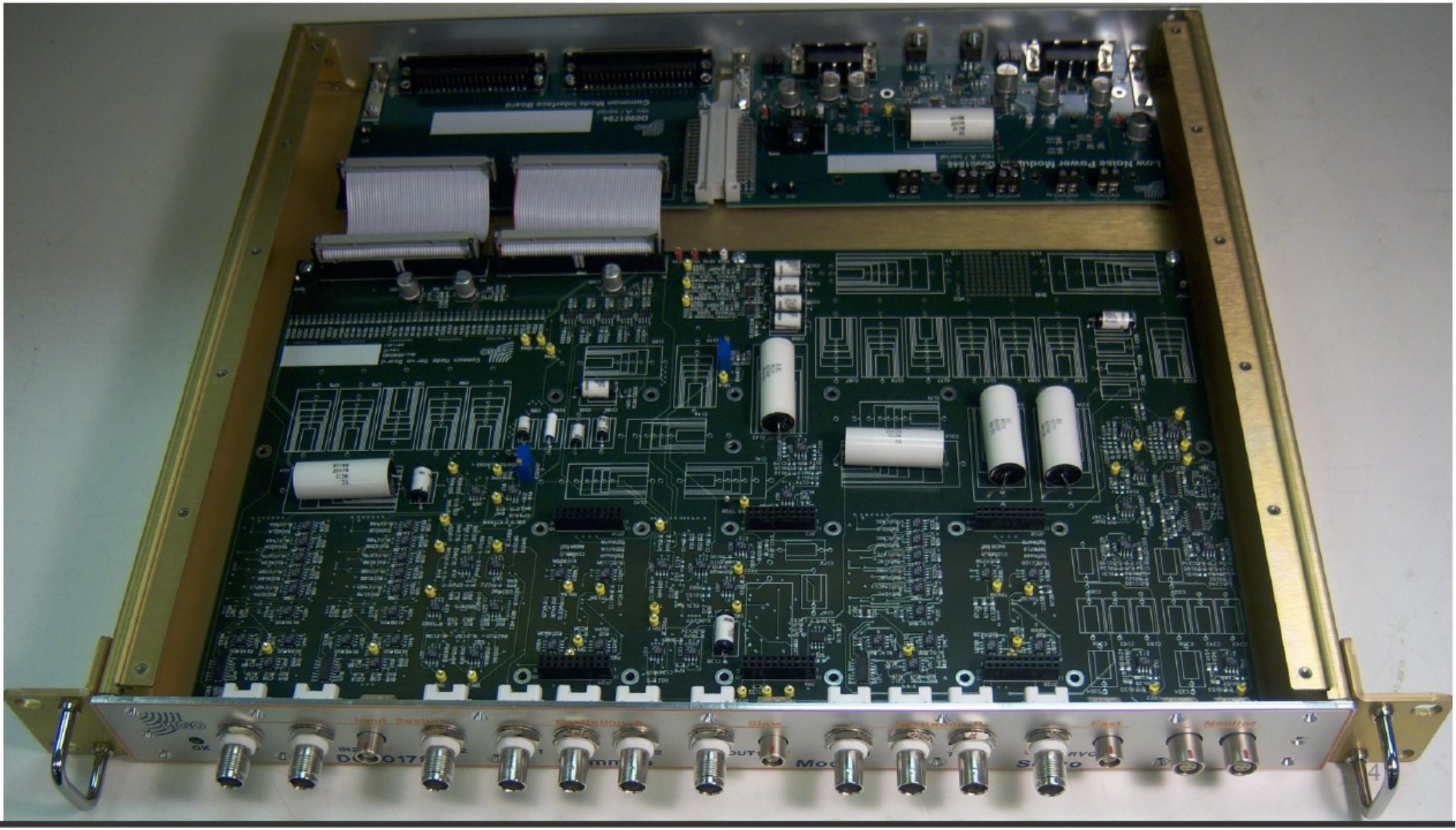
- RF PD
- RF QPD
- DC PD
- I-Q demodulators
- RF distribution
- Common mode servo board
- PMC servo board
- Cables (RF, D-Sub)

ISC Cabling diagram

by Y. Michimura



Common mode servo board



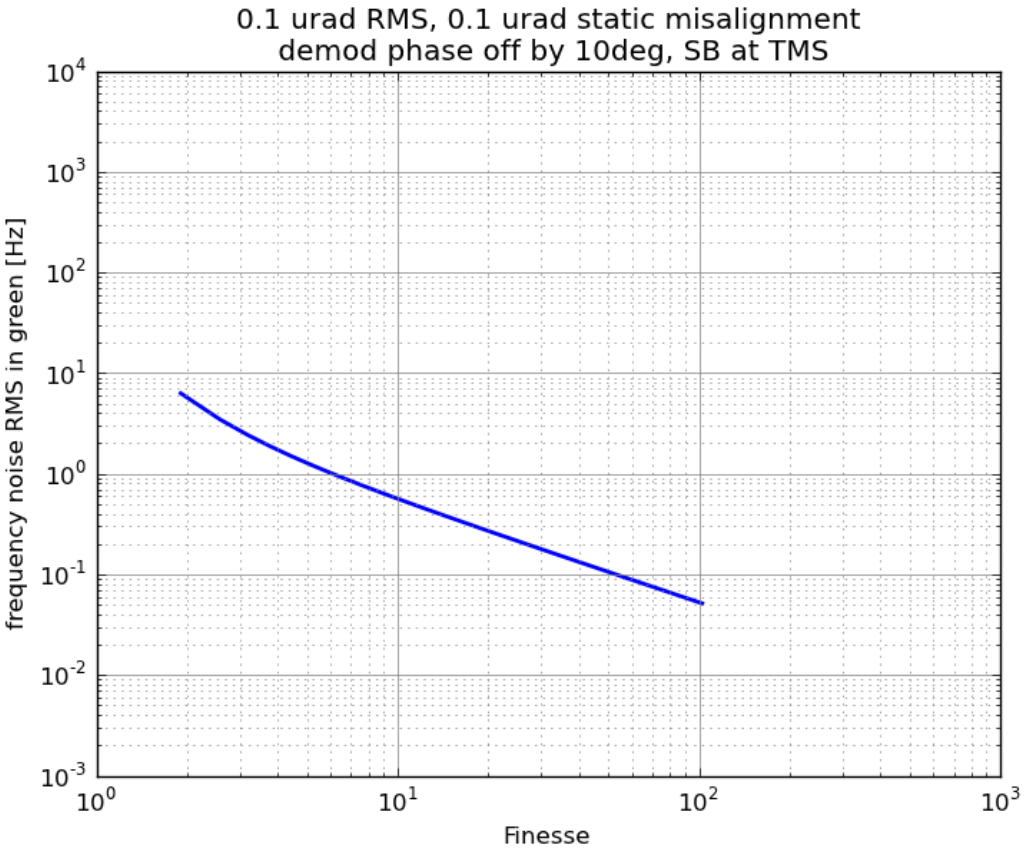
Green Finesse

aLIGO: green finesse is too low
--> Contamination of PDH signal from Higher Order Modes

KAGRA

Original design: F ~ 10

New design: F ~ 50
(T@532nm = 6%)



No extra cost on the mirror coating