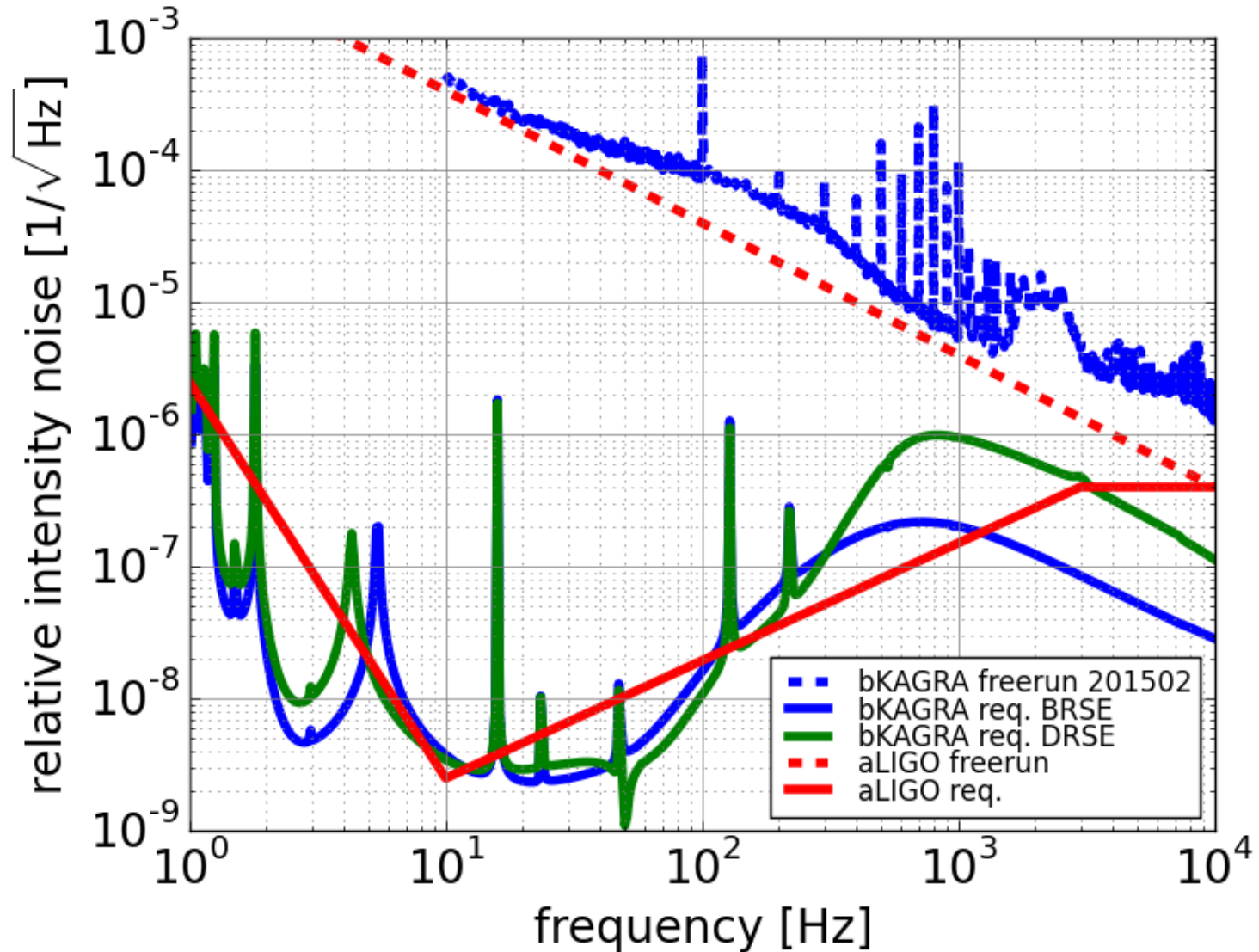# Intensity Stabilization Servo Plan

Yuta Michimura
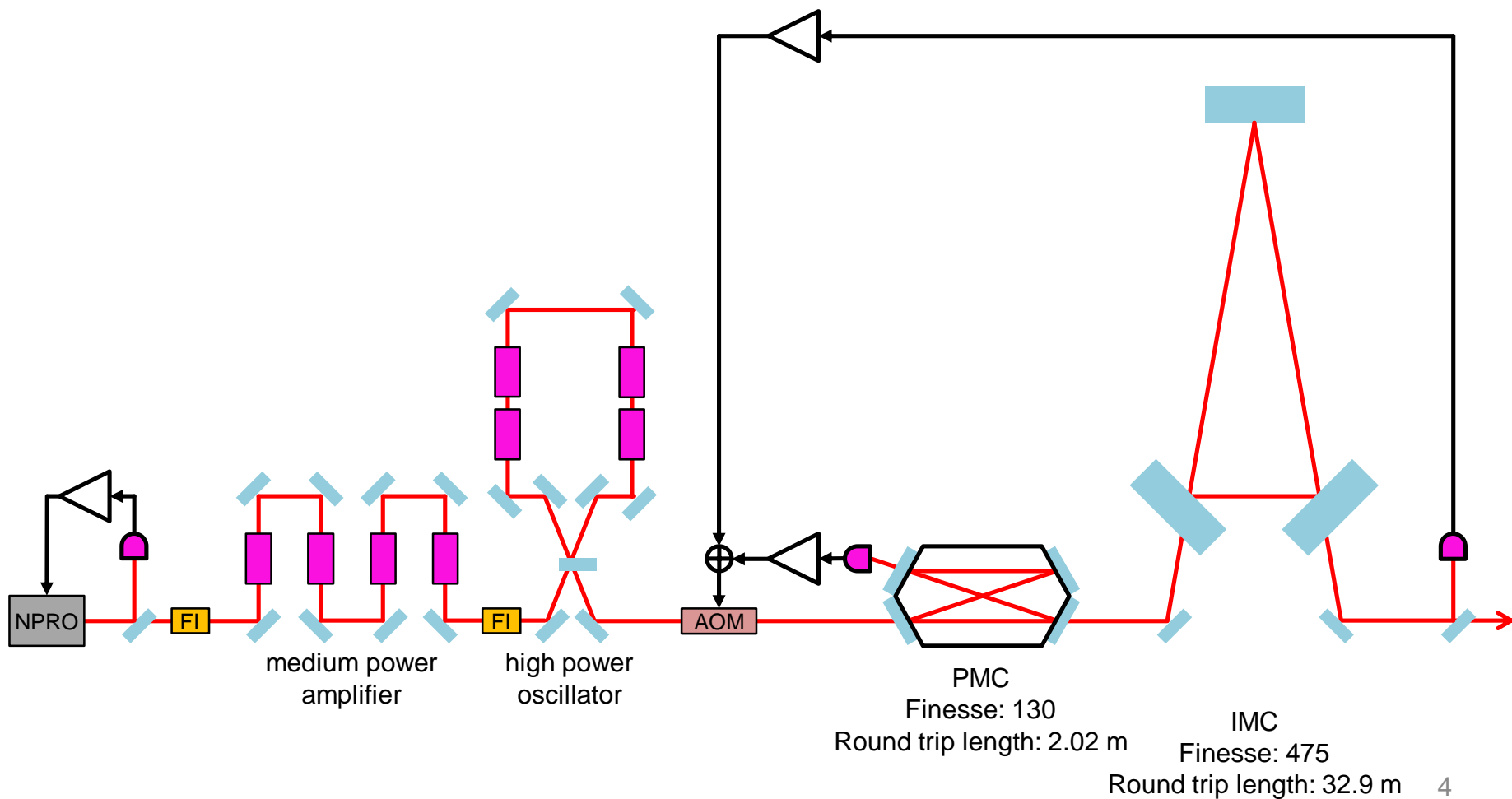
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Scope

- Start discussion on the sevo topology of the bKAGRA intensity stabilization servo (ISS)

- Start from following the aLIGO design

- Related documents:
  - Optics Express 20, 10617 (2012) (aLIGO ISS/FSS paper)
  - Optics Letters 34, 2912 (2009) (aLIGO ISS paper)
  - LIGO-T0900649 (aLIGO PSL Final Design)
  - JGW-G1503293 (bKAGRA laser development status)
  - JGW-T1200913 (requirement from MIF; Fig. 4.8, 4.9)

Requirement

- see related documents for the real spectra

aLIGO Topology

medium power
amplifier

high power
oscillator

PMC
Finesse: 130
Round trip length: 2.02 m

IMC
Finesse: 475
Round trip length: 32.9 m

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bKAGRA Topology Plan

- PMC design not fixed yet
- We can implement noise eater servo (pick off right after NPRO and feedback to NPRO)
- Any feedback to the current to the fiber amps and/or the solid state amps?

NPRO

FI

FI

fiber amplifier

solid state amplifier

AOM

PMC
Finesse: 155 ?
Round trip length: 1.95 m ?

IMC
Finesse: 500
Round trip length: 53.3 m