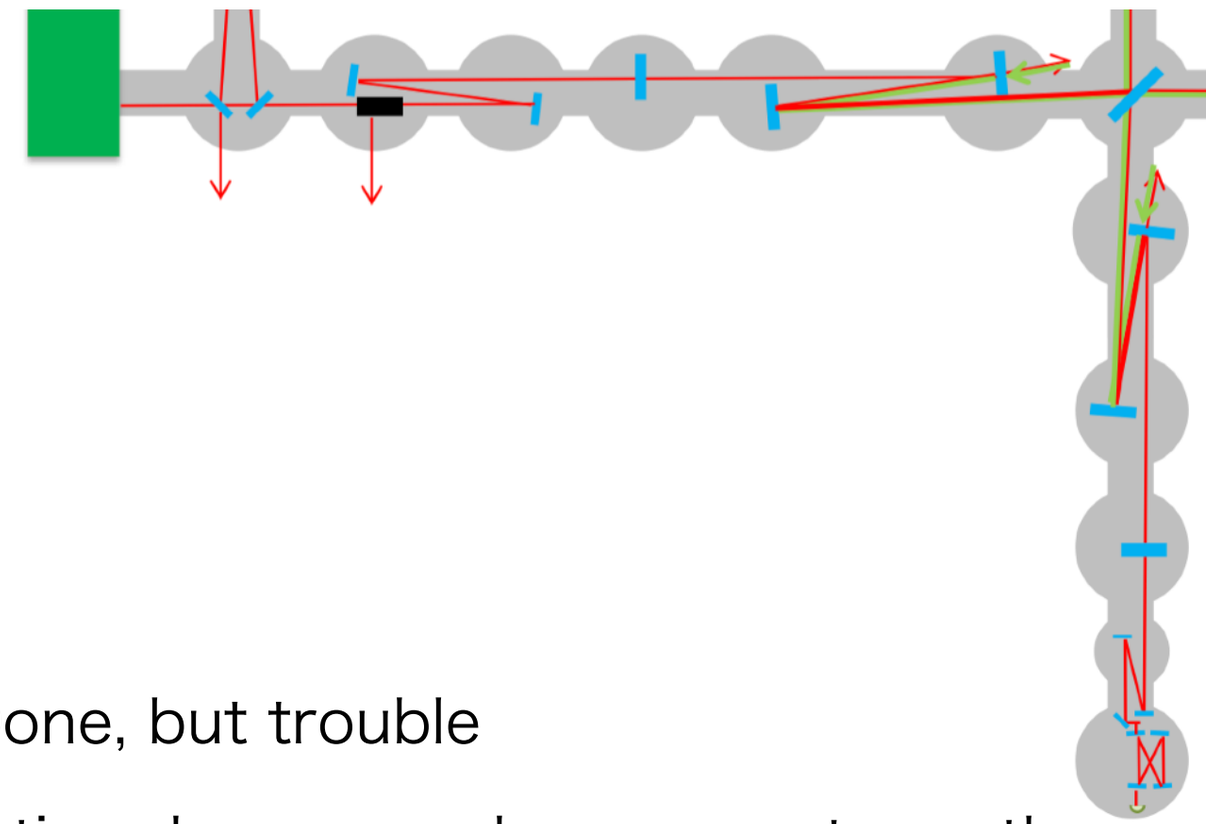
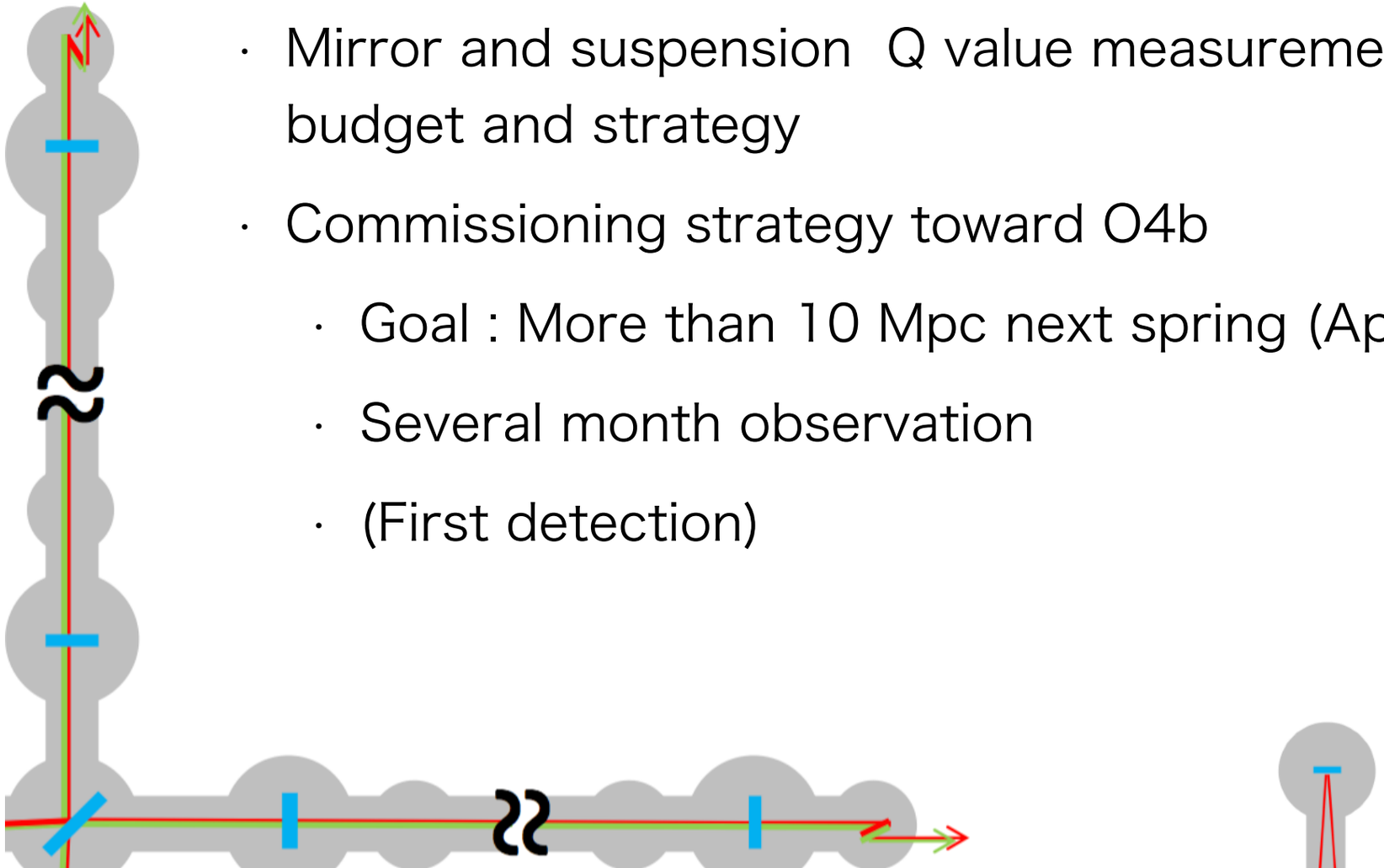
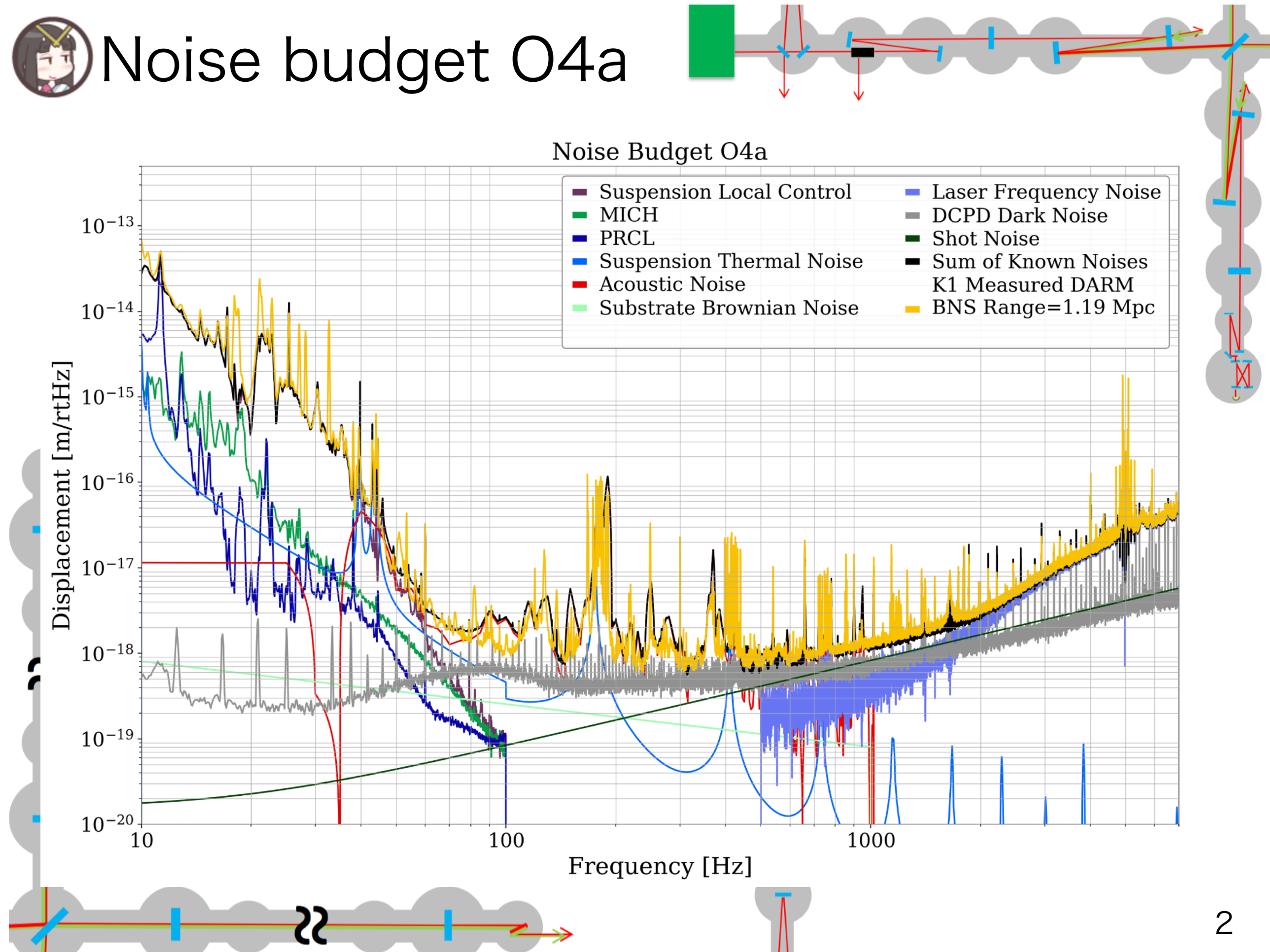
KAGRA status



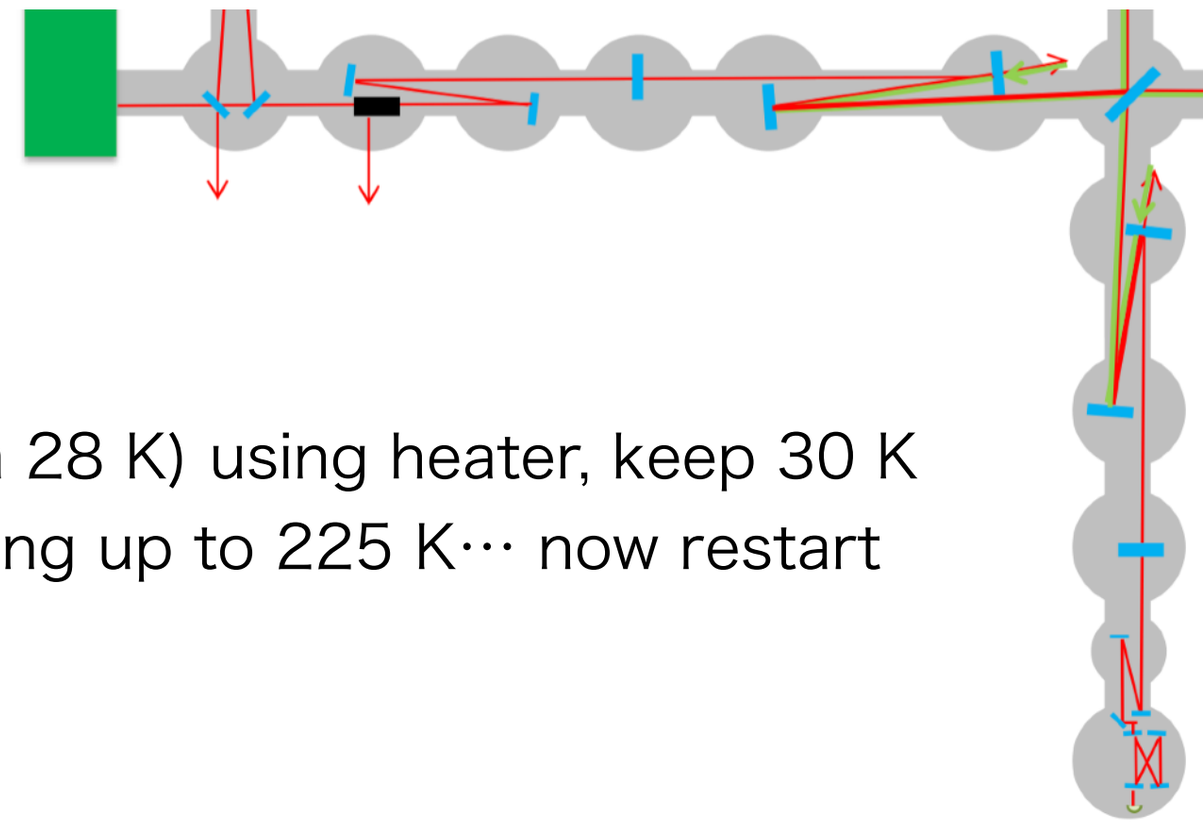
- After O4a
  - Cooling down : Ongoing
  - Replace new high power laser : Done, but trouble
  - OMC treatment : Stray light mitigation done, new damper next month
- Mirror and suspension Q value measurement : ongoing for noise budget and strategy
- Commissioning strategy toward O4b
  - Goal : More than 10 Mpc next spring (April?)
  - Several month observation
  - (First detection)



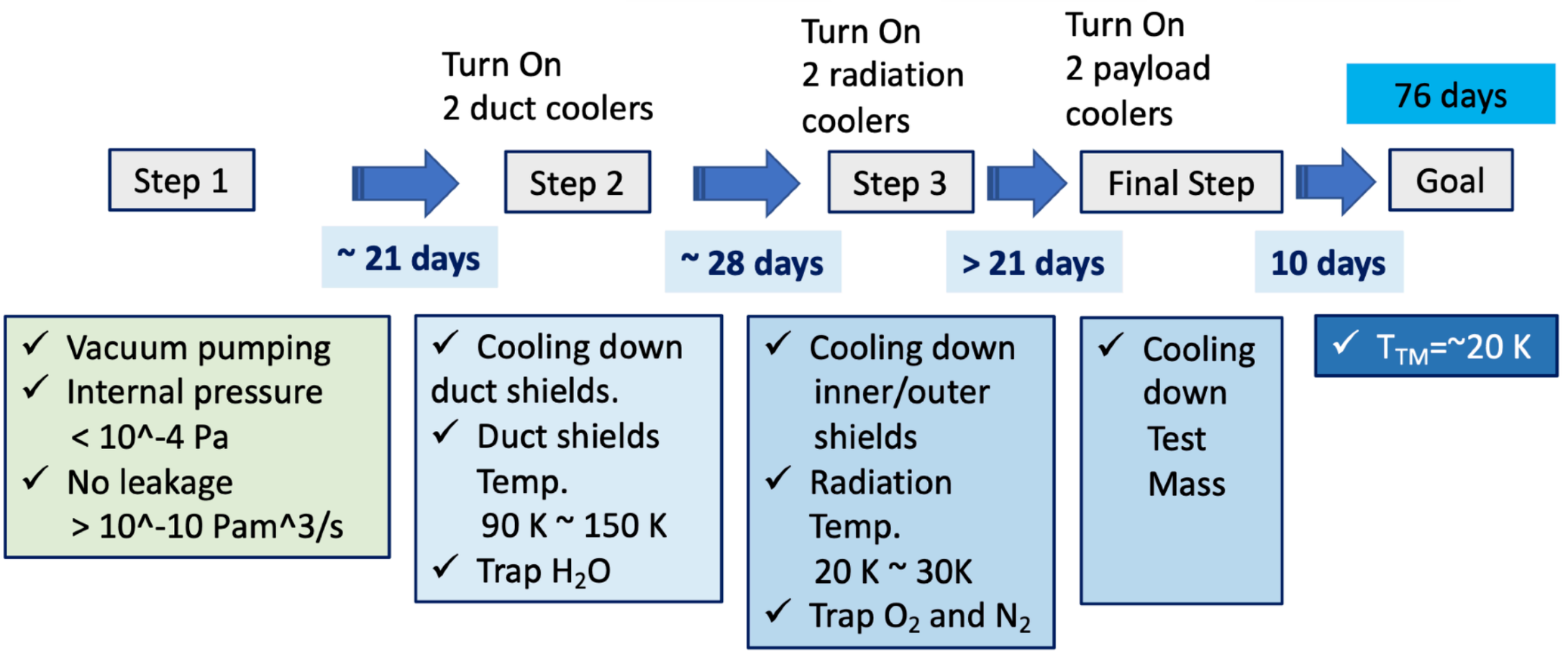
Noise budget O4a



Cooling down



- Start Cooling down from end of July
  - EX : 85 K -> 20 K -> 30 K -> 225 K
    - Frosting occurred in 20 K (Nitrogen 28 K) using heater, keep 30 K
    - Maintenance of cooler : once warming up to 225 K… now restart cooling
  - IX, IY, EY : 250 K -> 85 K
    - Discussing when cool down to 20 K



OMC treatment

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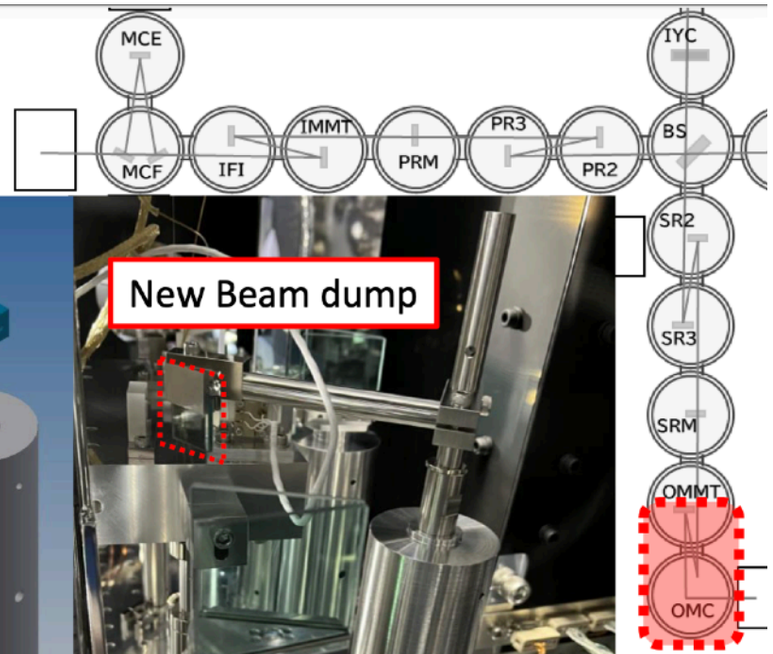
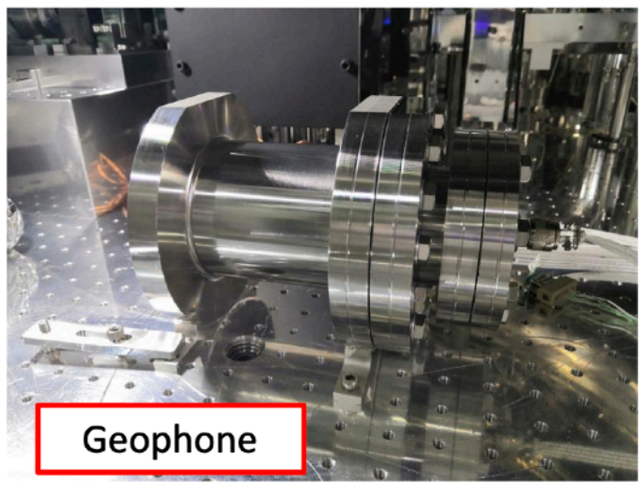
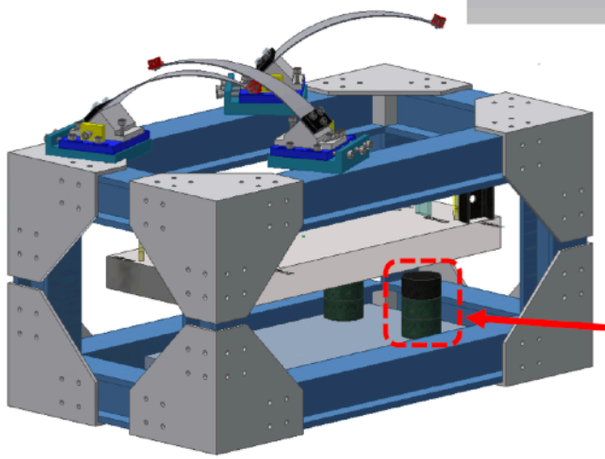
OMC (output mode cleaner) Chamber

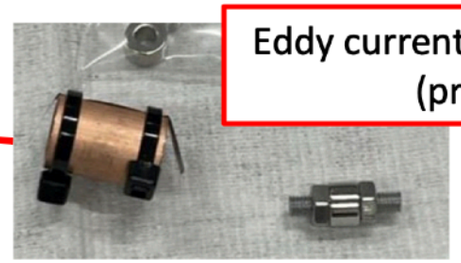
Toward O4b

- ✓ Mitigation of the environmental noise influence
- ✓ Installation and optimization of beam dumps
- ☐ Installation of vibration dampers
- ☐ Installation of an in-vac geophone
- ☐ Optimization of fixing the in-vac optics/cables

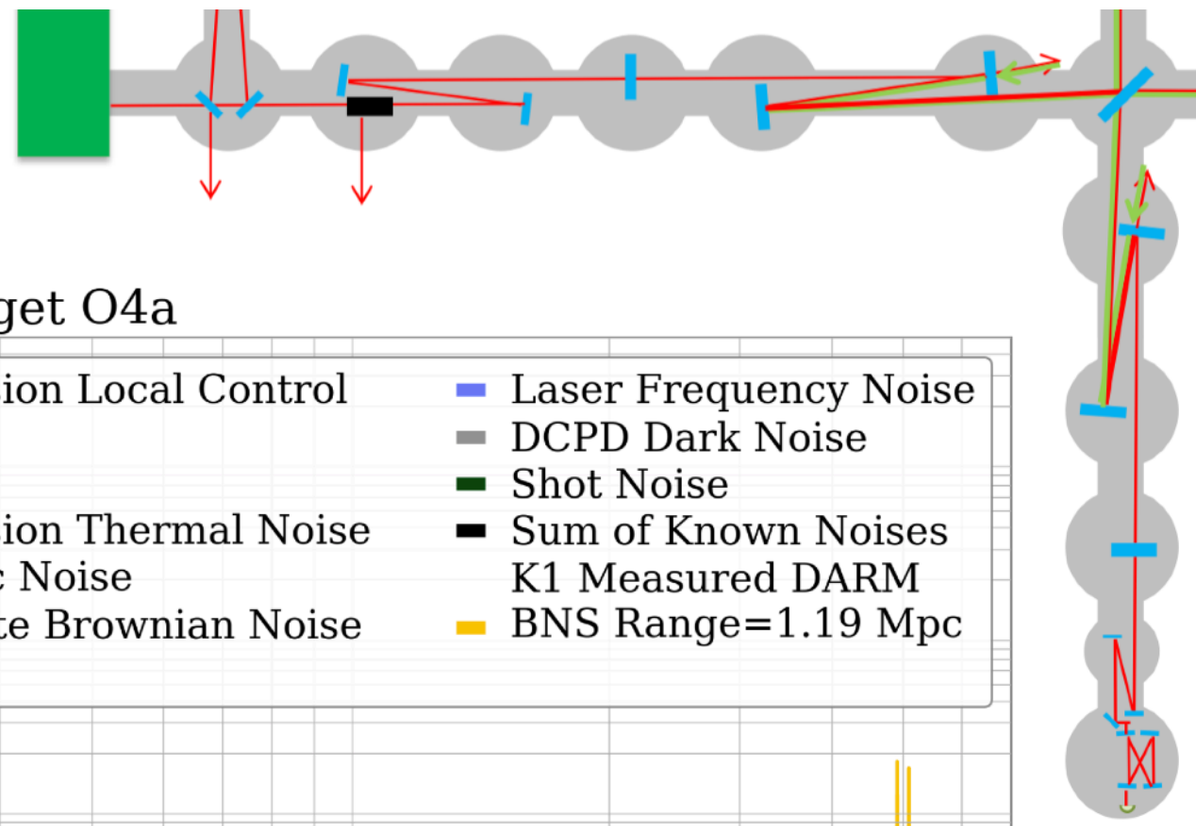




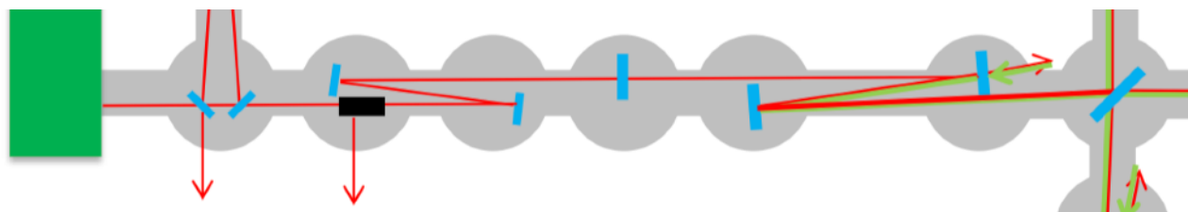


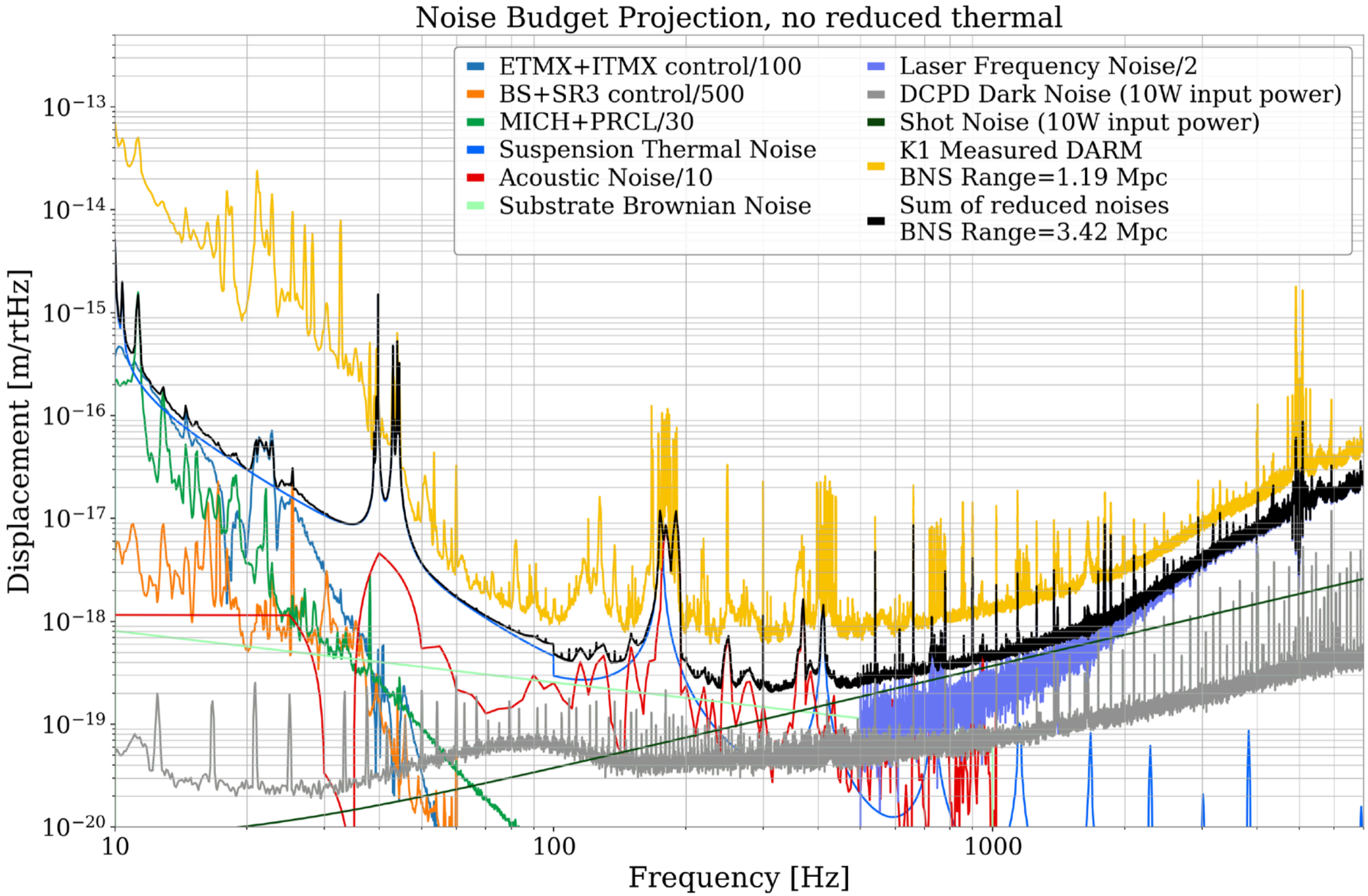


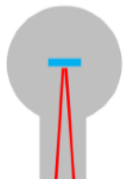
Noise budget O4a



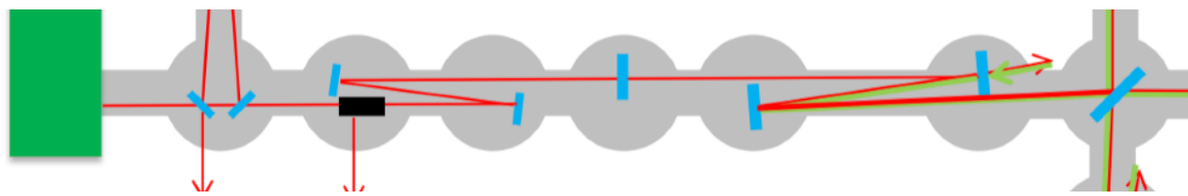
Strategy noise hunting

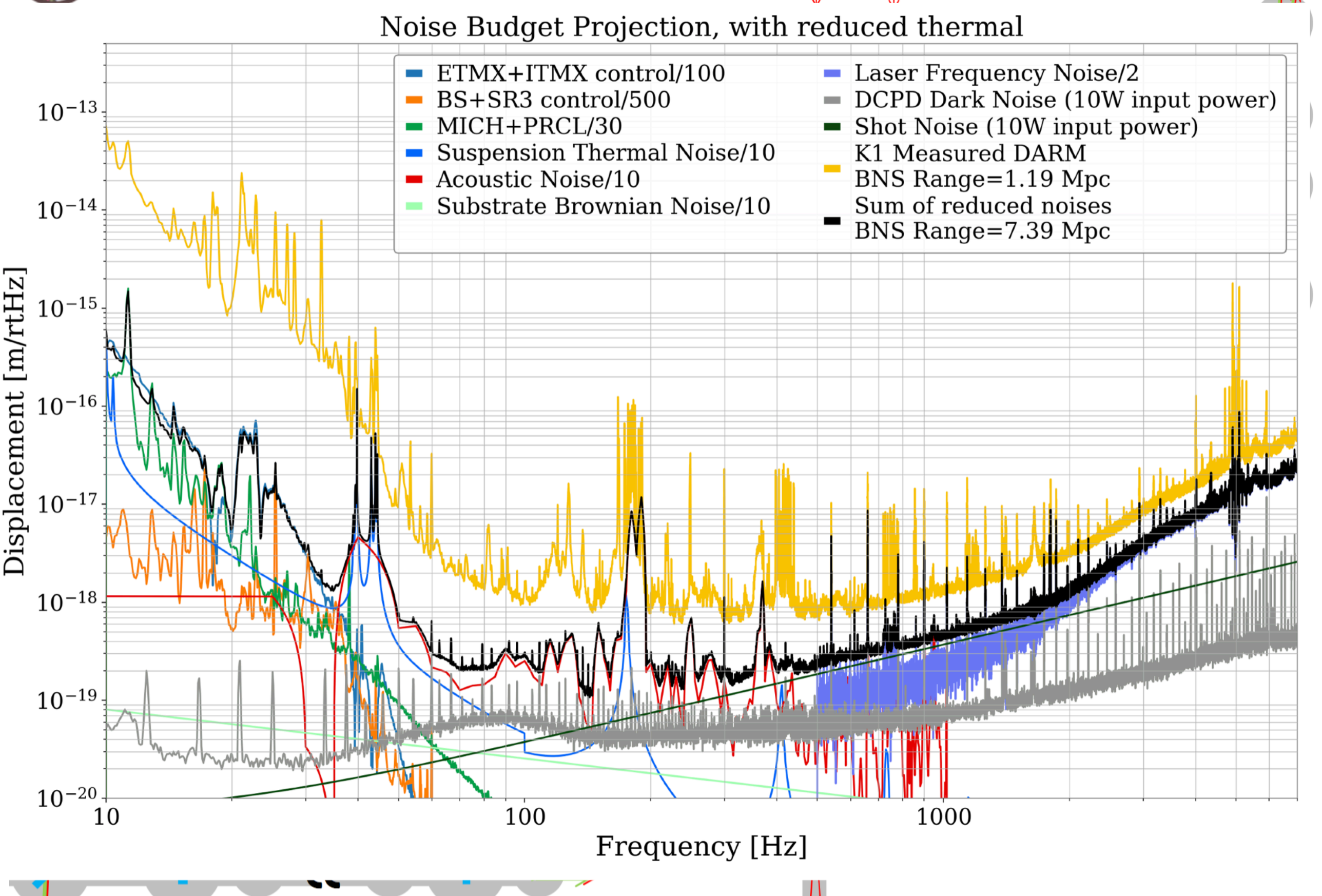




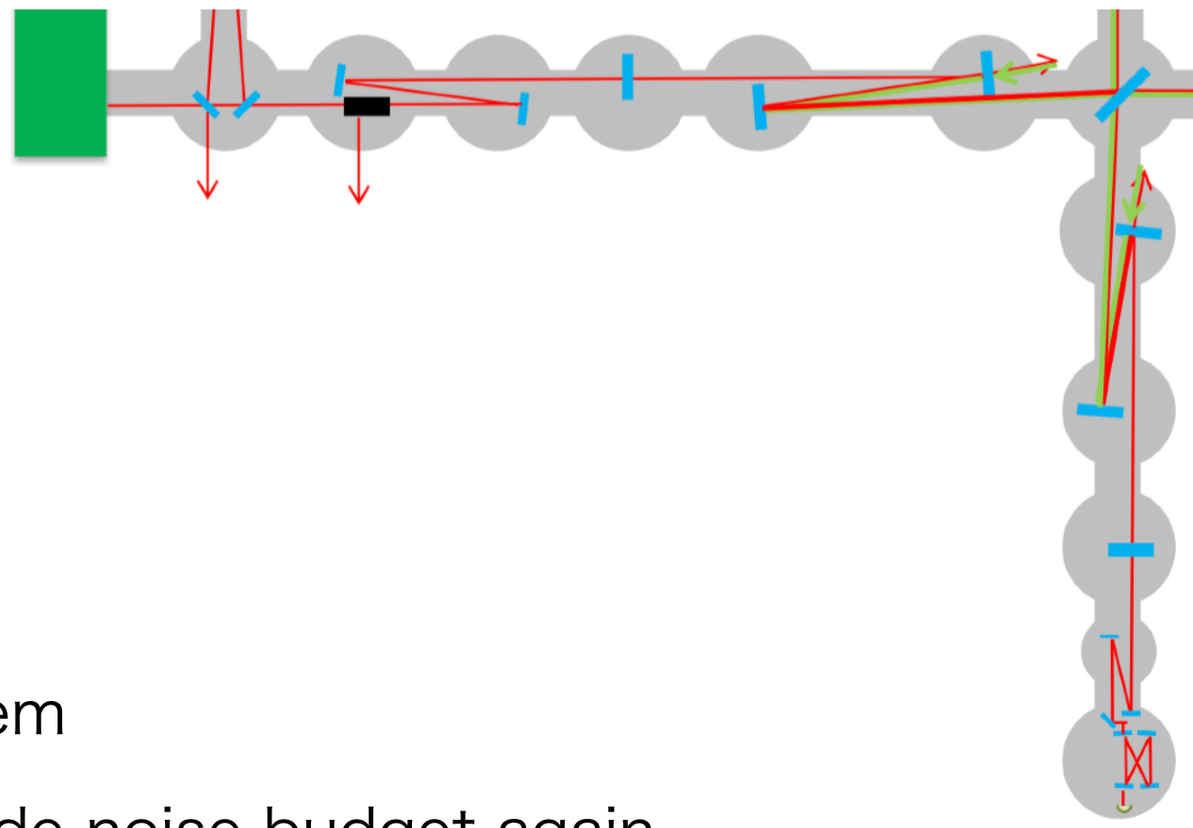


Strategy noise hunting





Strategy noise hunting



- So
  - Cooling down :
    - Error handing for cooling system
    - Measuring the Q value and made noise budget again
  - Increasing laser power :
    - At least 10 W IMC output
  - Good suspension control
    - Challenging, but try
  - Acoustic noise hunting
    - OMC treatment