

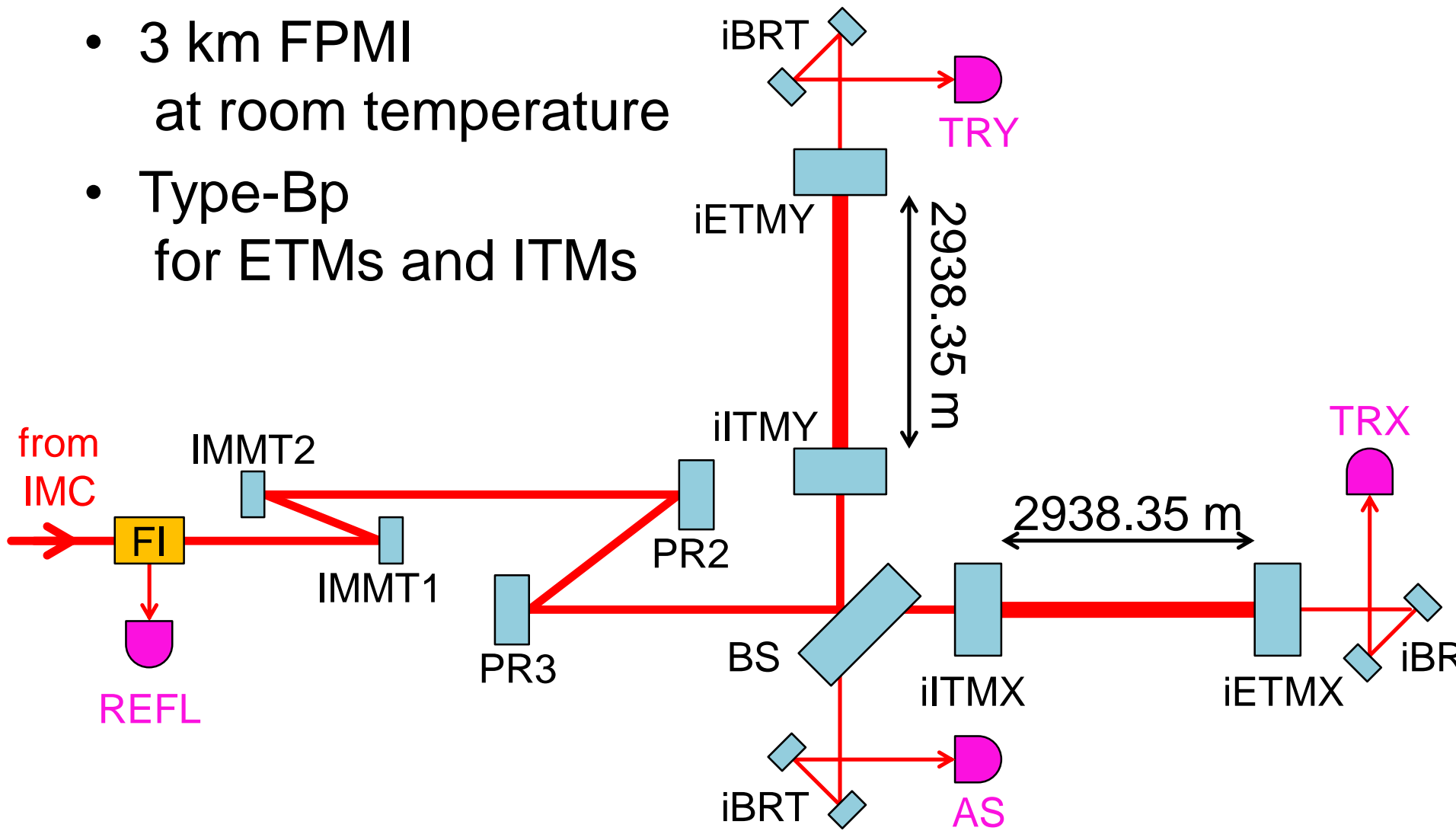
New iKAGRA Configuration

Yuta Michimura

Department of Physics, University of Tokyo

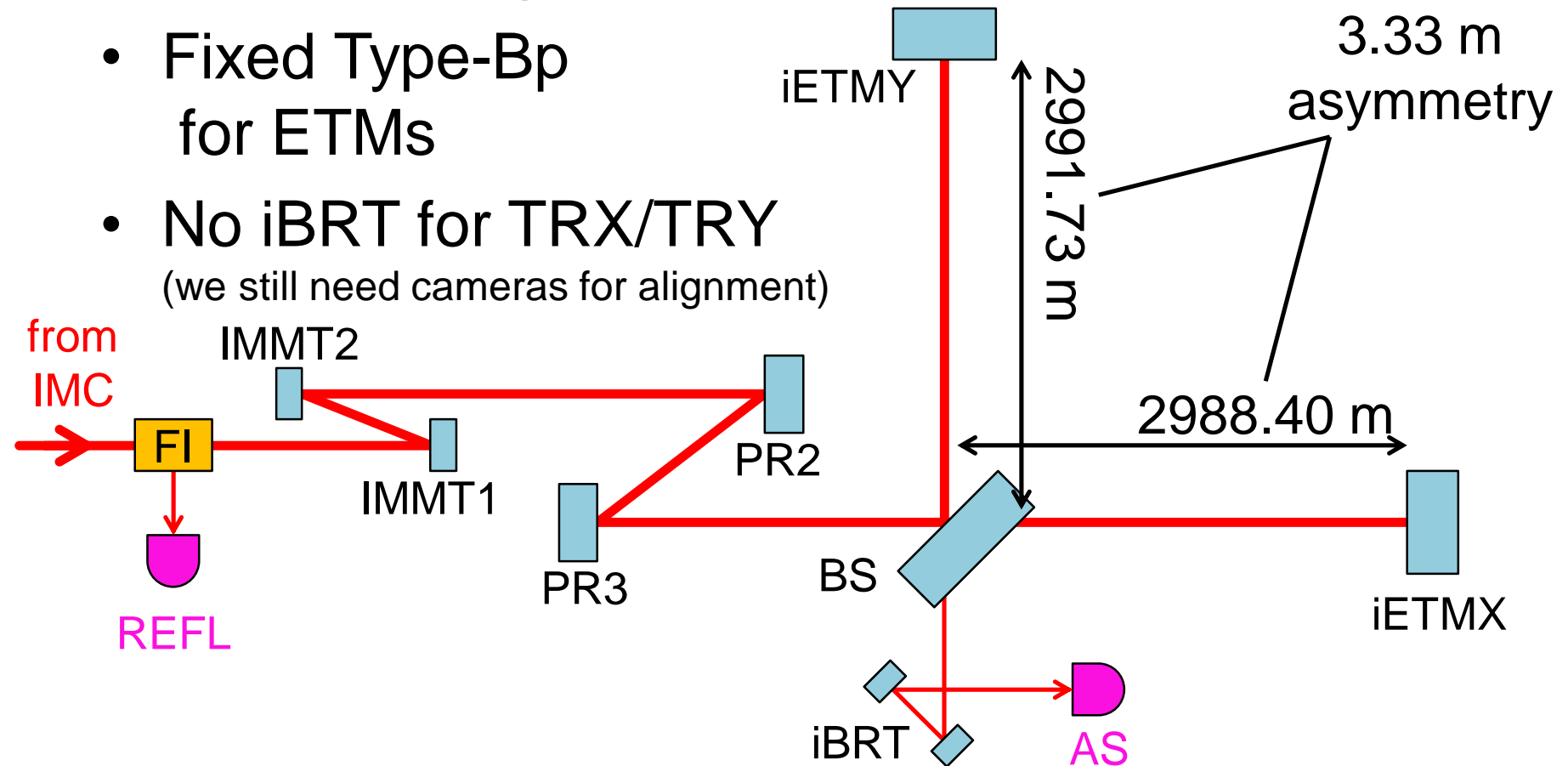
Original iKAGRA Configuration

- 3 km FPMI at room temperature
- Type-Bp for ETMs and ITMs



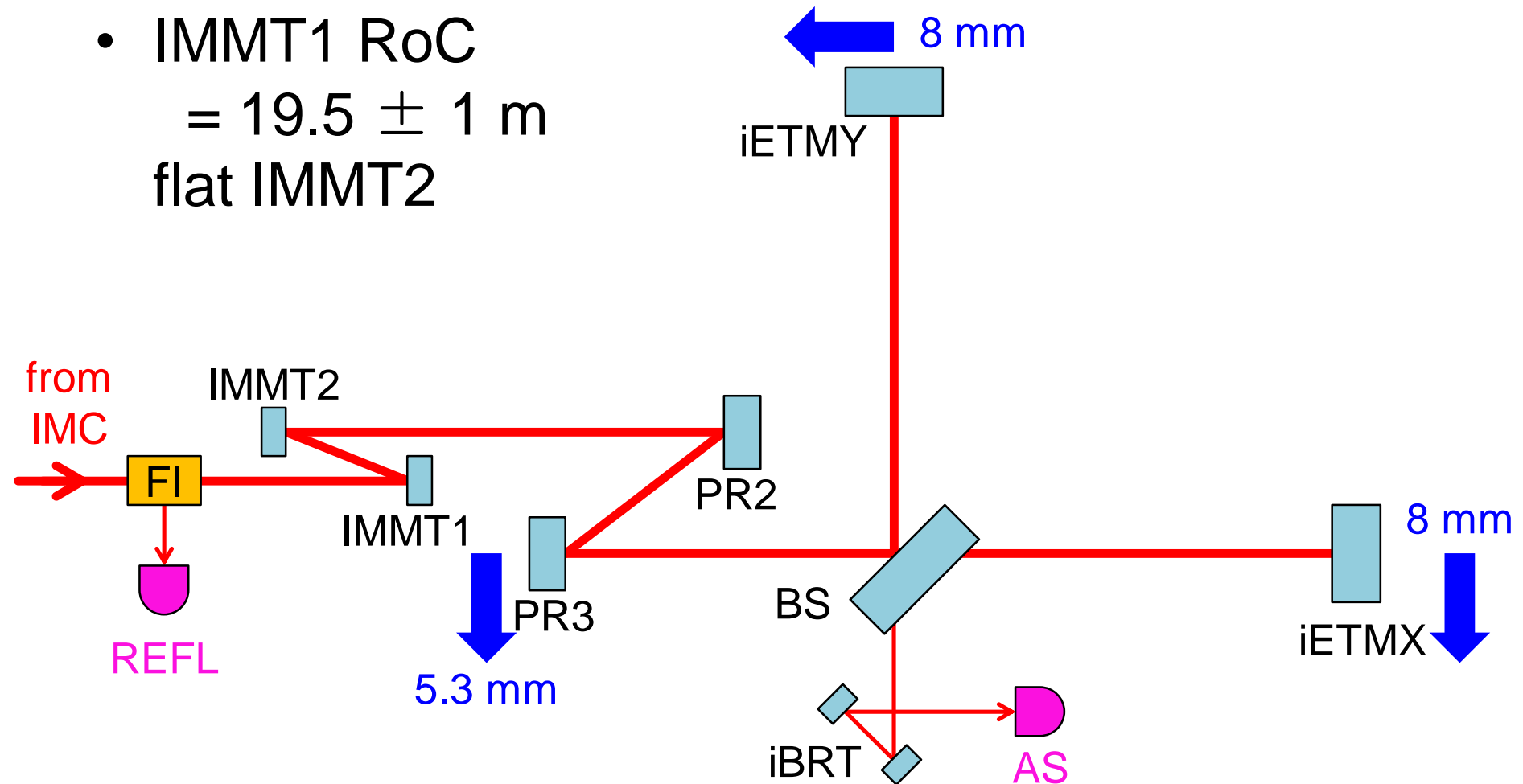
New iKAGRA Configuration

- 3 km Michelson at room temperature
- Fixed Type-Bp for ETMs
- No iBRT for TRX/TRY
(we still need cameras for alignment)



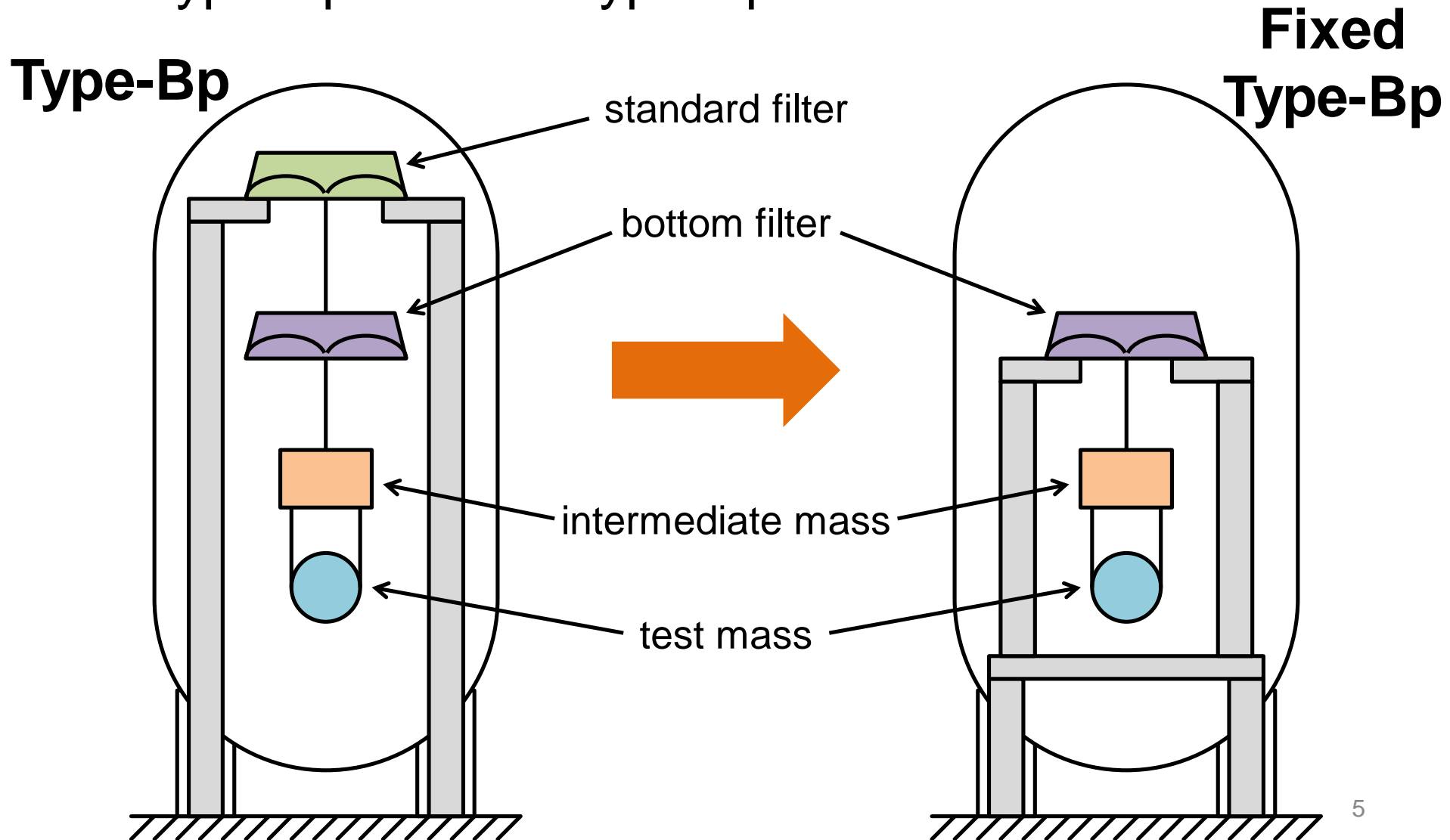
Optical Layout Tweaks

- move PR3 and ETMs (since ITM wedge is gone)
- IMMT1 RoC
= 19.5 ± 1 m
flat IMMT2

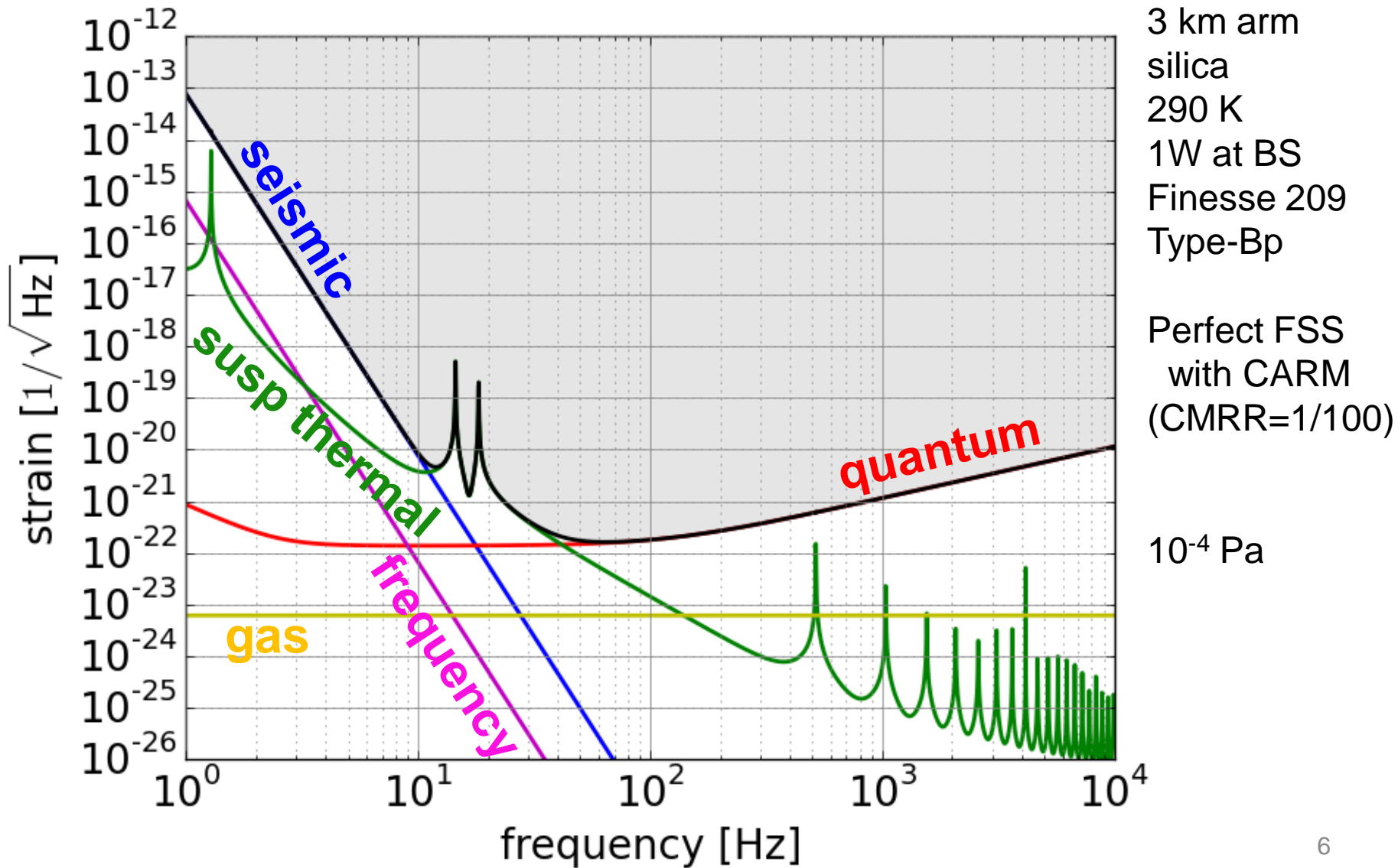


Suspension Change

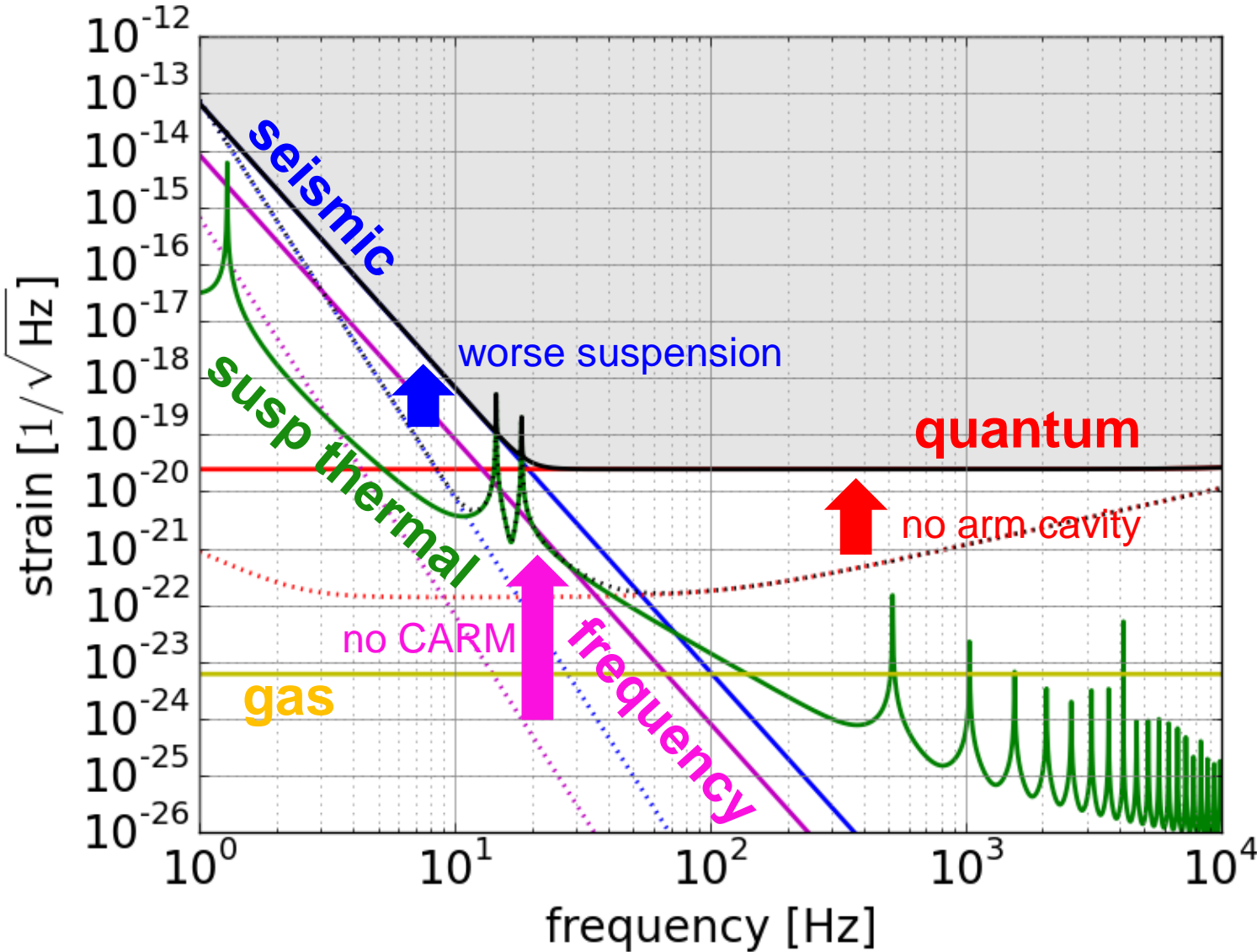
- Type-Bp to fixed Type-Bp



Original iKAGRA Sensitivity



New iKAGRA Sensitivity



3 km arm
 silica
 290 K
 1W at BS
 Michelson
 Fixed Type-Bp

Perfect FSS
 with IMC
 (3.33 m MICH
 asymmetry)

10^{-4} Pa

Summary of Differences

	Original iKAGRA	New iKAGRA
Configuration	3 km FPMI	3 km Michelson
Temperature	room temperature	room temperature
Test mass suspension	Type-Bp (triple pendulum)	Fixed Type-Bp (double pendulum)
Sensitivity at 100Hz	$2e-22 / \sqrt{\text{Hz}}$	$2e-20 / \sqrt{\text{Hz}}$
3 km layout test	with arm cavities	no arm cavities
Frequency stabilization	as far as CARM	as far as IMC
iBRT for ETM trans	necessary	unnecessary