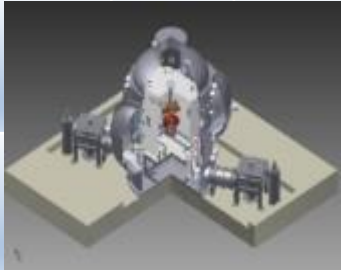
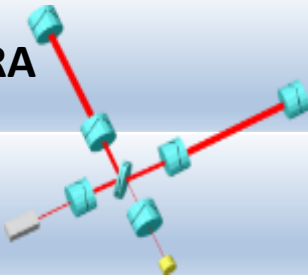
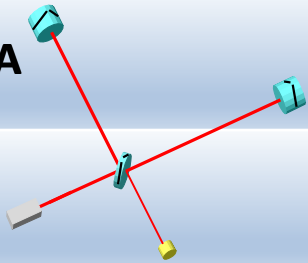
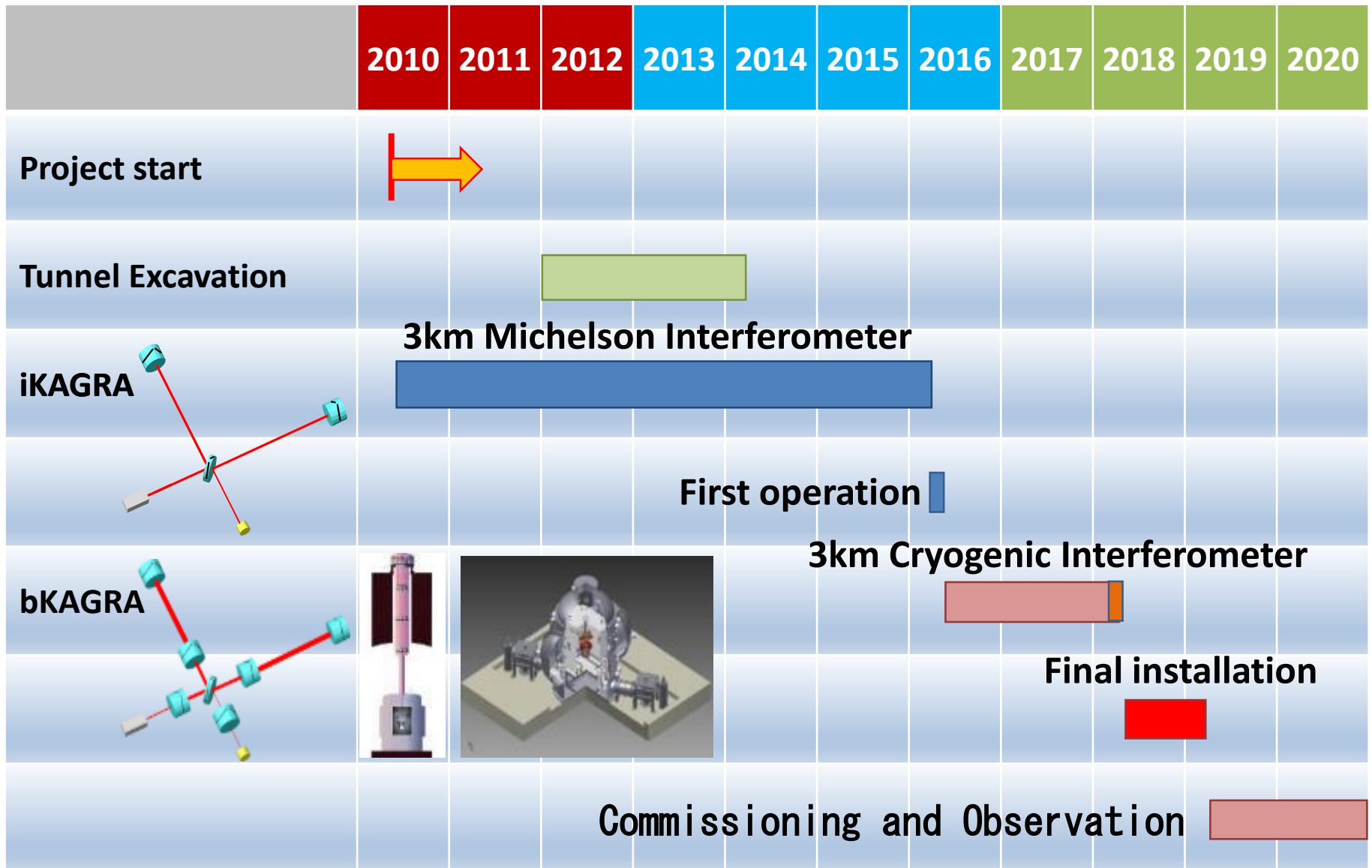


KAGRA – Toward joining O3



Masatake OHASHI (ICRR)

Schedule of KAGRA



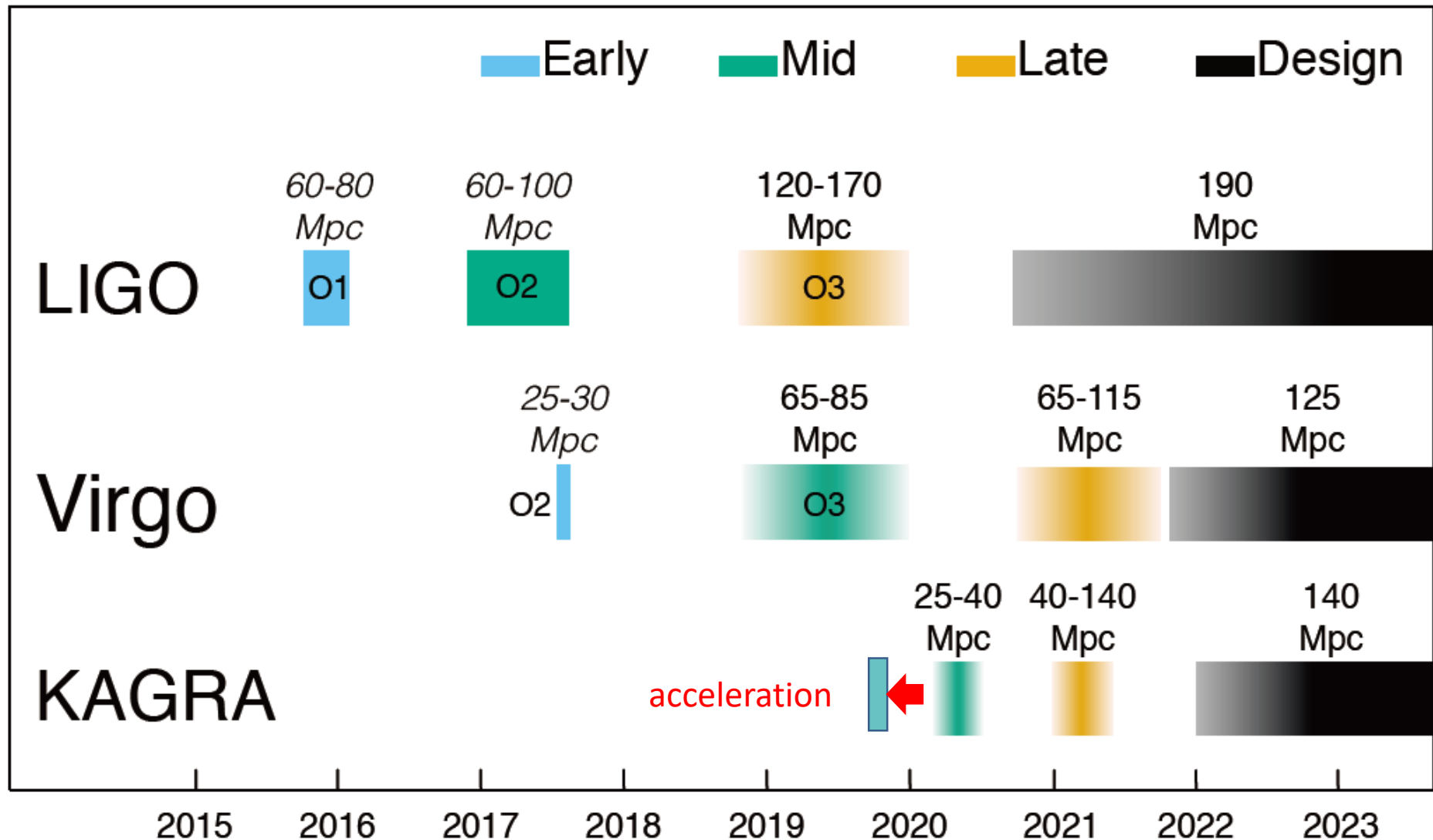
3km Michelson Interferometer

3km Cryogenic Interferometer

Commissioning and Observation

Toward joining O3

- We have decided to accelerate KAGRA schedule to join O3.



Required Items

⊙: Necessary for locking

○: Can be omitted with extra work

△: Can be omitted with sensitivity degradation

×: Not necessary

* AM generation with 45 deg tilted
EOM is not possible with wedged
EOM

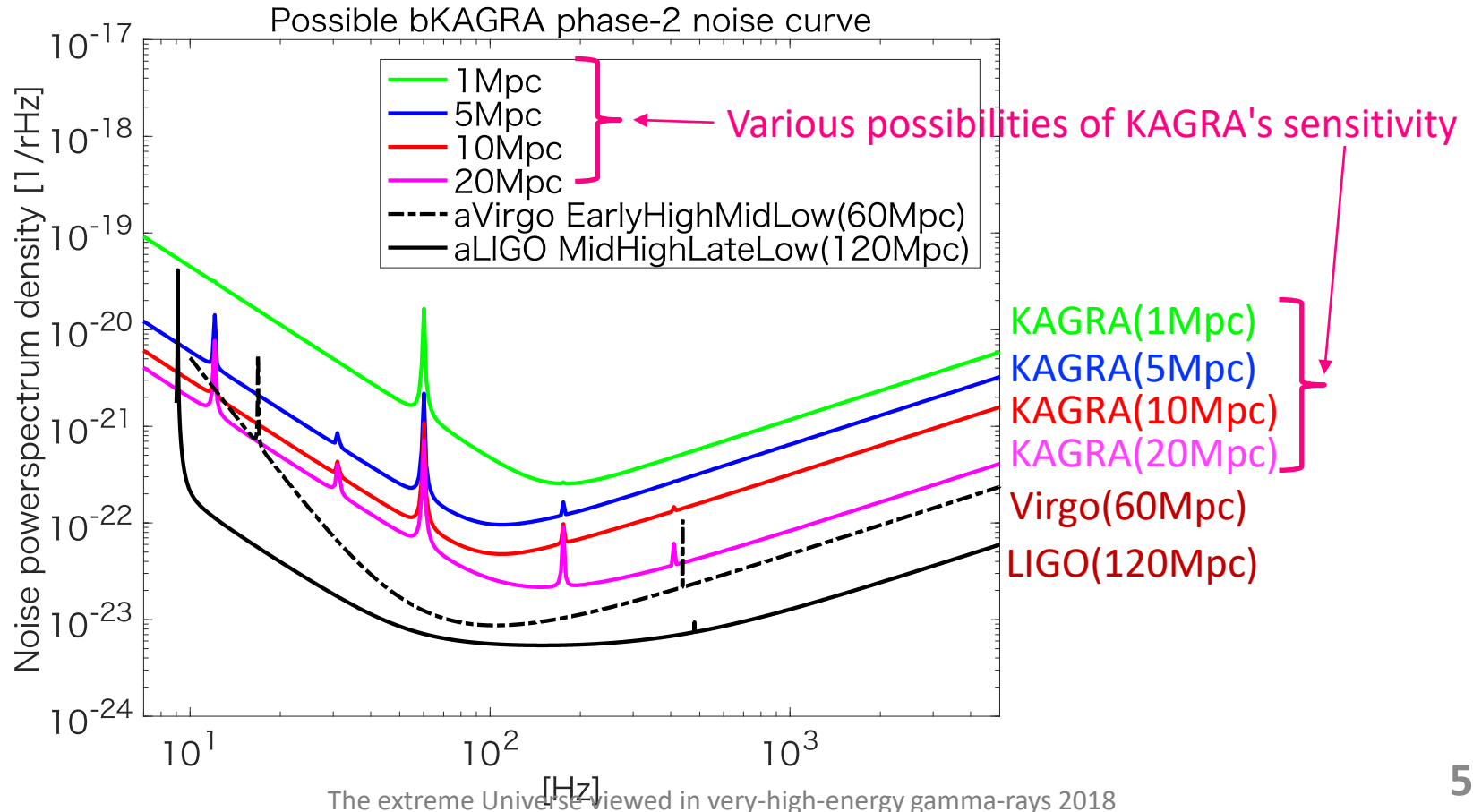
Sensitivity (10W, x4 O1 excess)	DRFPMI (RSE) (42 Mpc)	PRFPMI (27 Mpc)	FPMI (9.5 / 16 Mpc)
ALS (green lock)	⊙	○	× (better to have)
f3 AM (MZI *)	⊙	○	×
Extra locking simulation	×	⊙	×
SRC ASC	⊙	×	×
SRM	⊙	○ (Blank or move OMMT)	○ (Blank or move OMMT)
OMC	△	△	△
Comment	SRC ASC might be tough	f1 will be 1/10, no SRC mode cleaning	PRM: tilt or blank or move IMMT No PRC jitter attenuation

Noise Curves

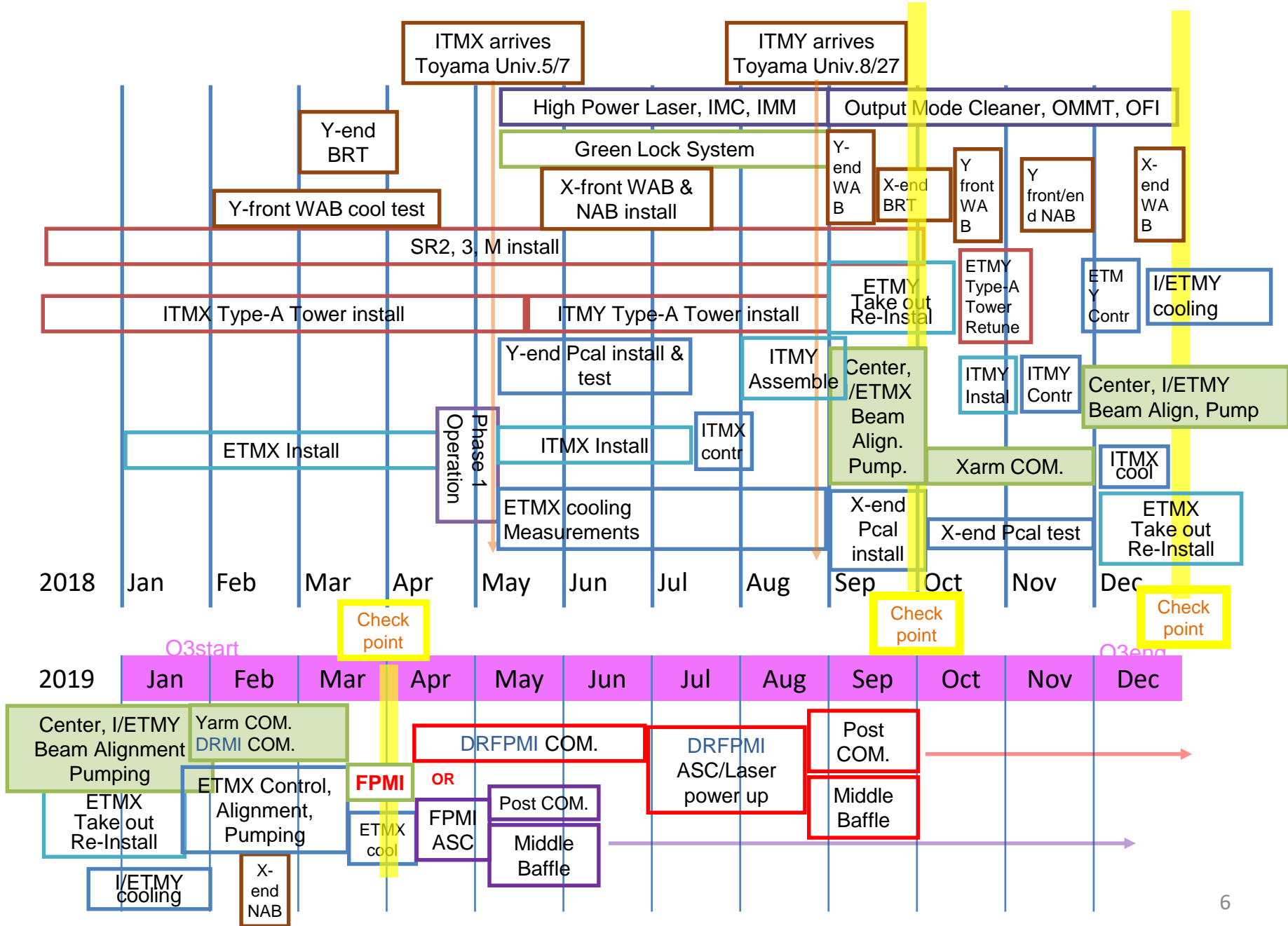
Enomoto and Michimura made 3 noise curves of KAGRA with BNS range of (1.3, 9.6, 42)Mpc.

We interpolate these curves to obtain noise curves for other ranges.

For LIGO/Virgo, LIGO: 120Mpc, Virgo 60Mpc (taken from arXiv:1304.0670v6)
(Living Reviews in Relativity; 21:3; 2018)



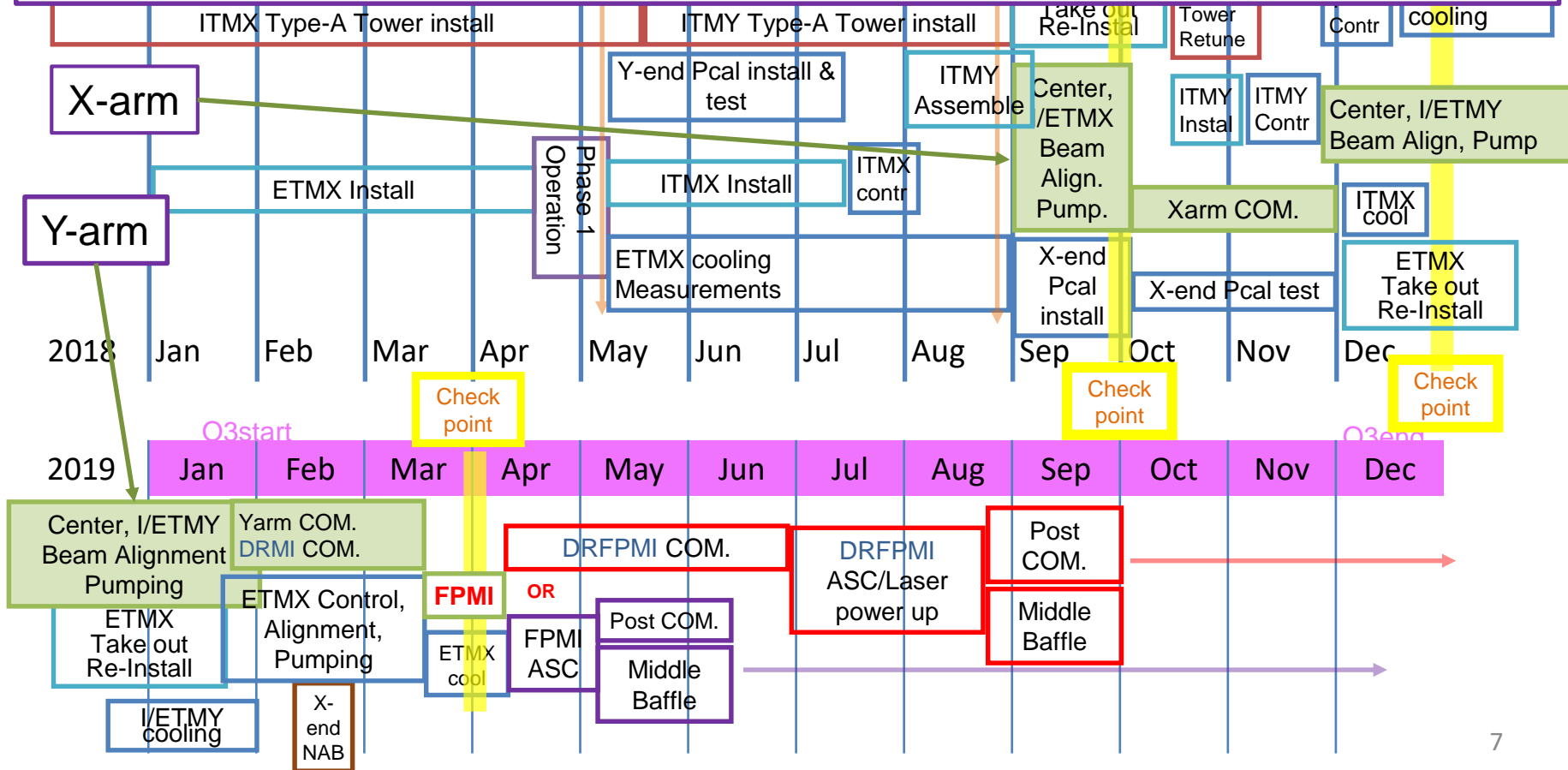
bKAGRA phase-2 schedule



bKAGRA phase-2 schedule

Outline of the schedule

- Installation will be completed by the end of March 2019.
- Commissioning will start from September 2018 along with installation works.
- Commissioning of the first full interferometer configuration (FPMI) will start from March 2019. After then, we start DRFPMI or FPMI, depending on results of three checking points planned on the end of September, December and March.

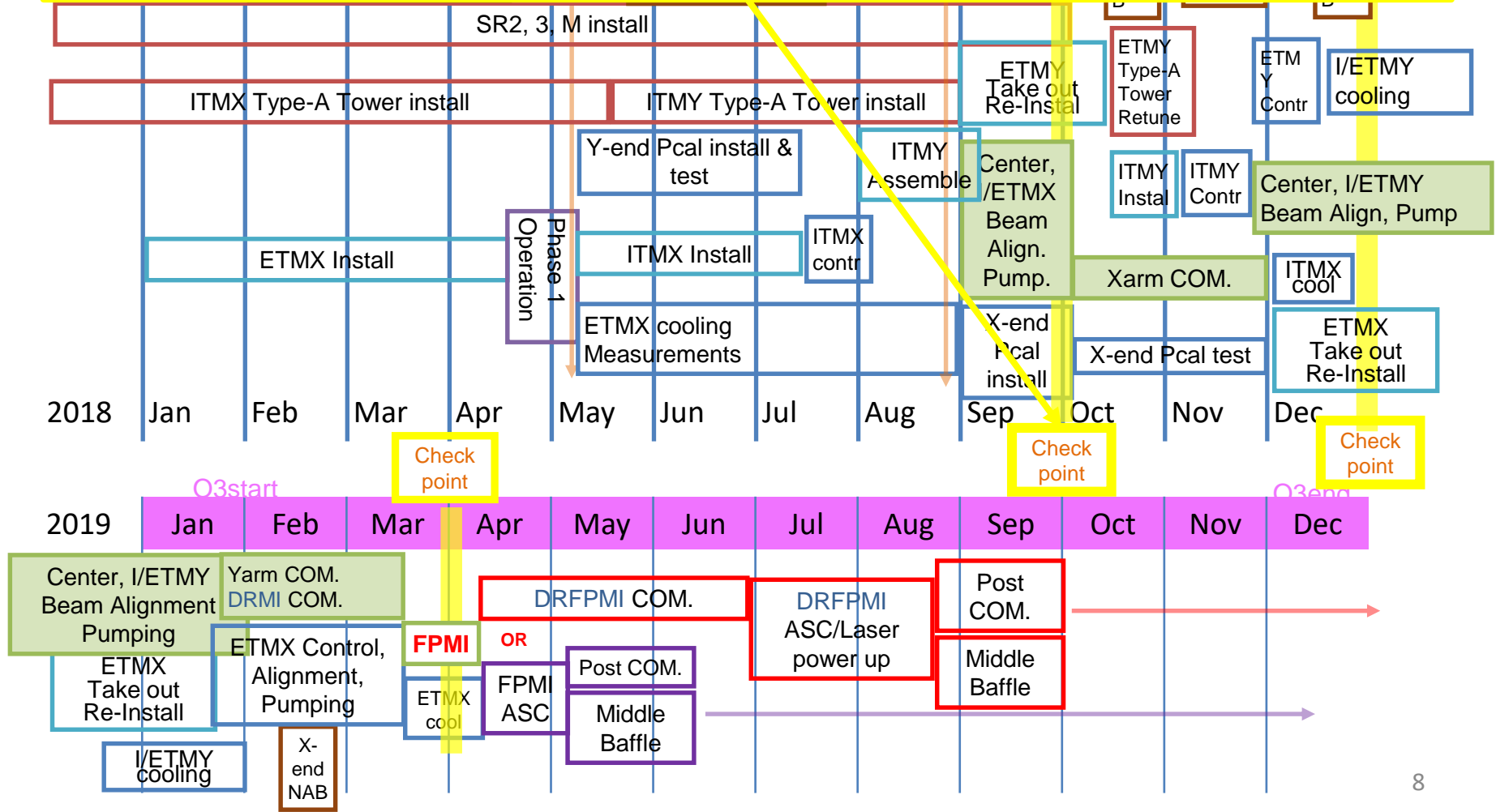


bKAGRA phase-2 schedule

ITMX arrives
Toyama Univ.5/7

ITMY arrives
Toyama Univ.8/27

Checkpoint at the end of September
 If either ITMY, high power laser or green lock system is not available at this point, FPMI is to be selected.



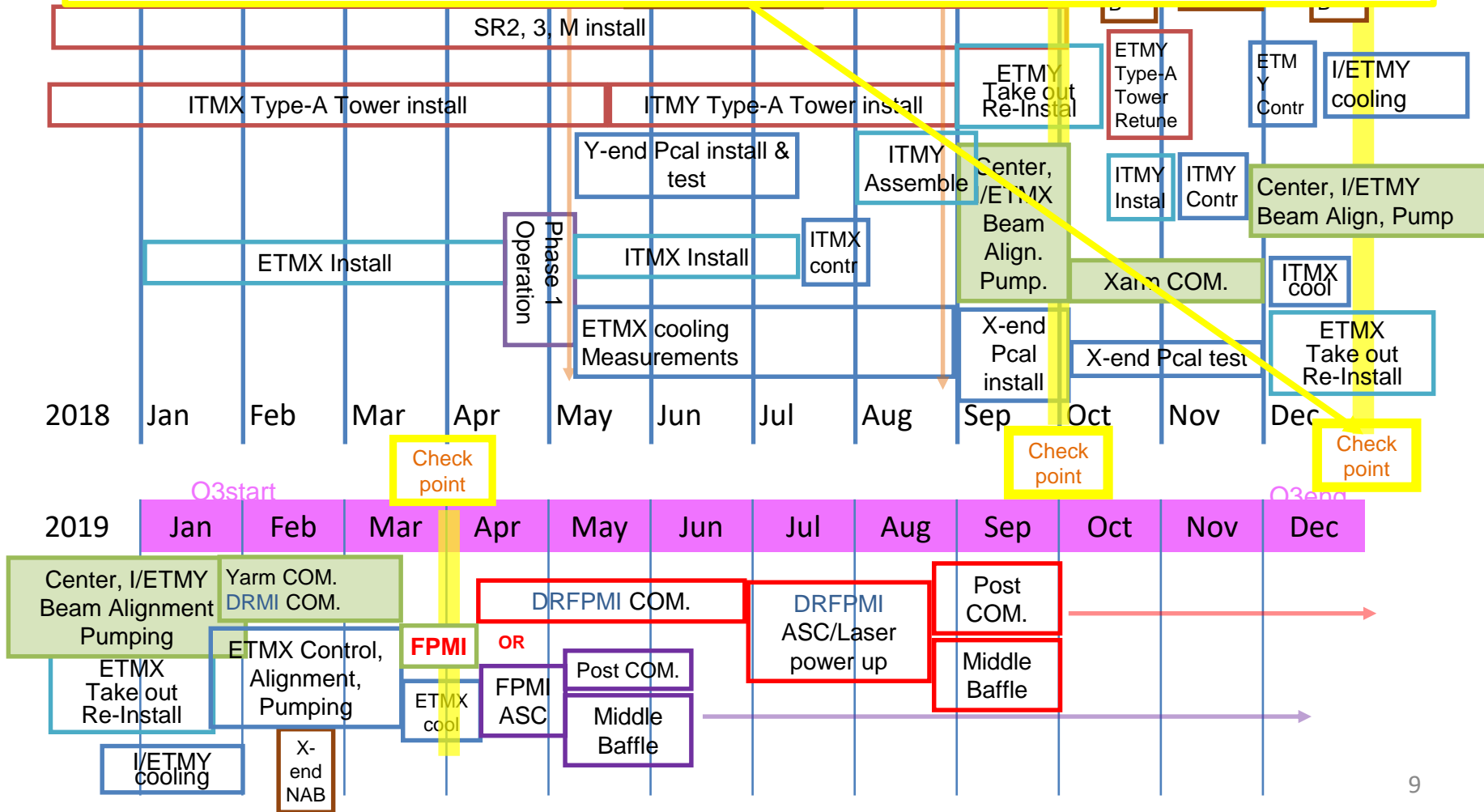
bKAGRA phase-2 schedule

ITMX arrives
Toyama Univ.5/7

ITMY arrives
Toyama Univ.8/27

Checkpoint at the end of December

If any serious delay or troubles in X-arm commissioning would be found, FPMI is to be selected.

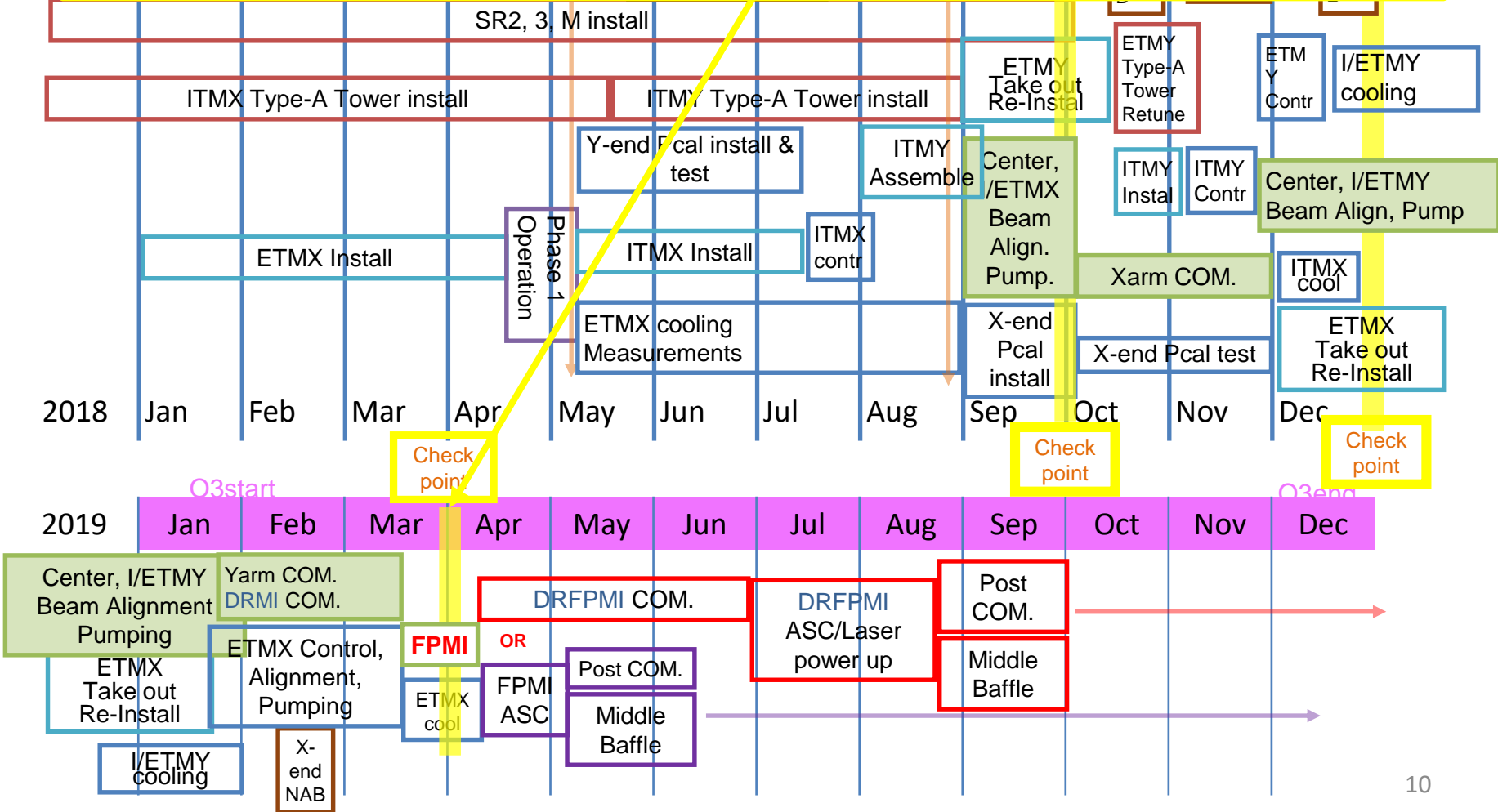


bKAGRA phase-2 schedule

ITMX arrives
Toyama Univ.5/7

ITMY arrives
Toyama Univ.8/27

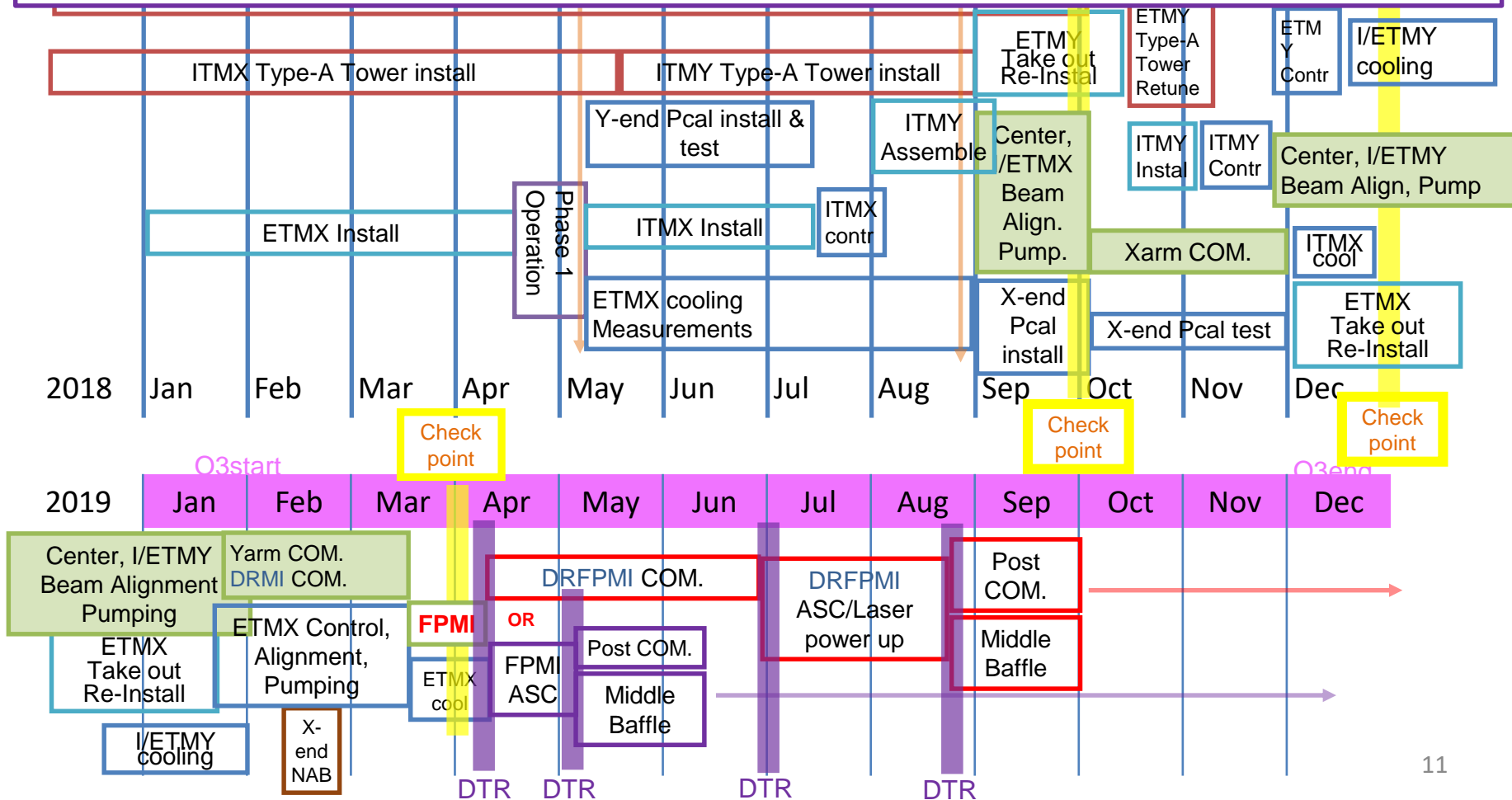
Checkpoint at the end of March
DRFPMI will be selected if all the elements are available,
otherwise ASC (*alignment sensing control*) of FPMI is proceeded.



bKAGRA phase-2 schedule

Data transfer rehearsal (test with L/V); possible schedule

- DMG & DAS are planning DTRs with dummy data before O3 starting. KSC is in charge of scheduling and so on.
- DTRs shown on the bottom schedule will be using live KAGRA data. DTRs may take a week or so.



Summary

- In the spring of 2019, we expect to complete the construction phase and move on to the commissioning phase. KAGRA plans to join O3 in the fall of 2019.