

List of RF Cables to Purchase for Early Phase of bKAGRA

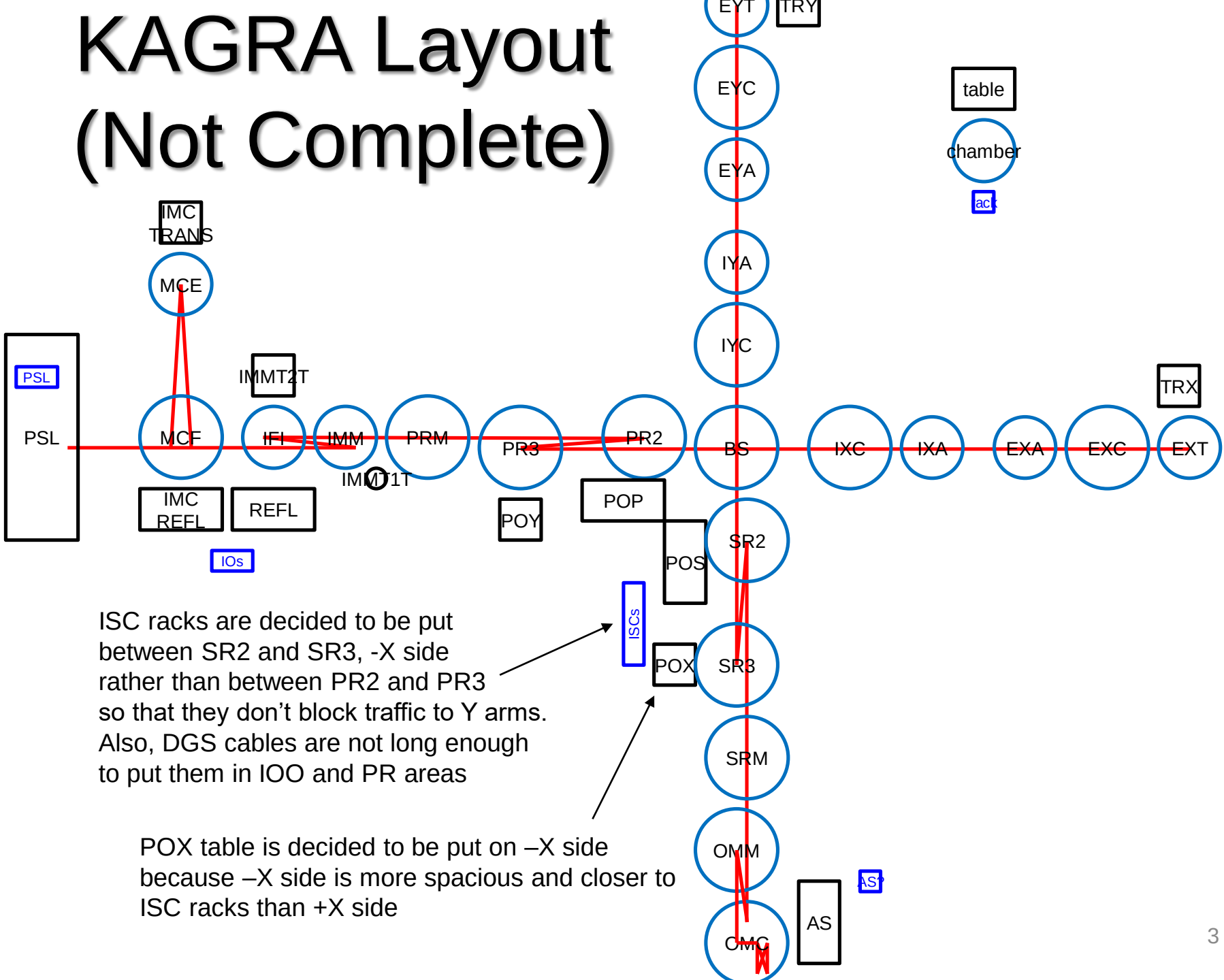
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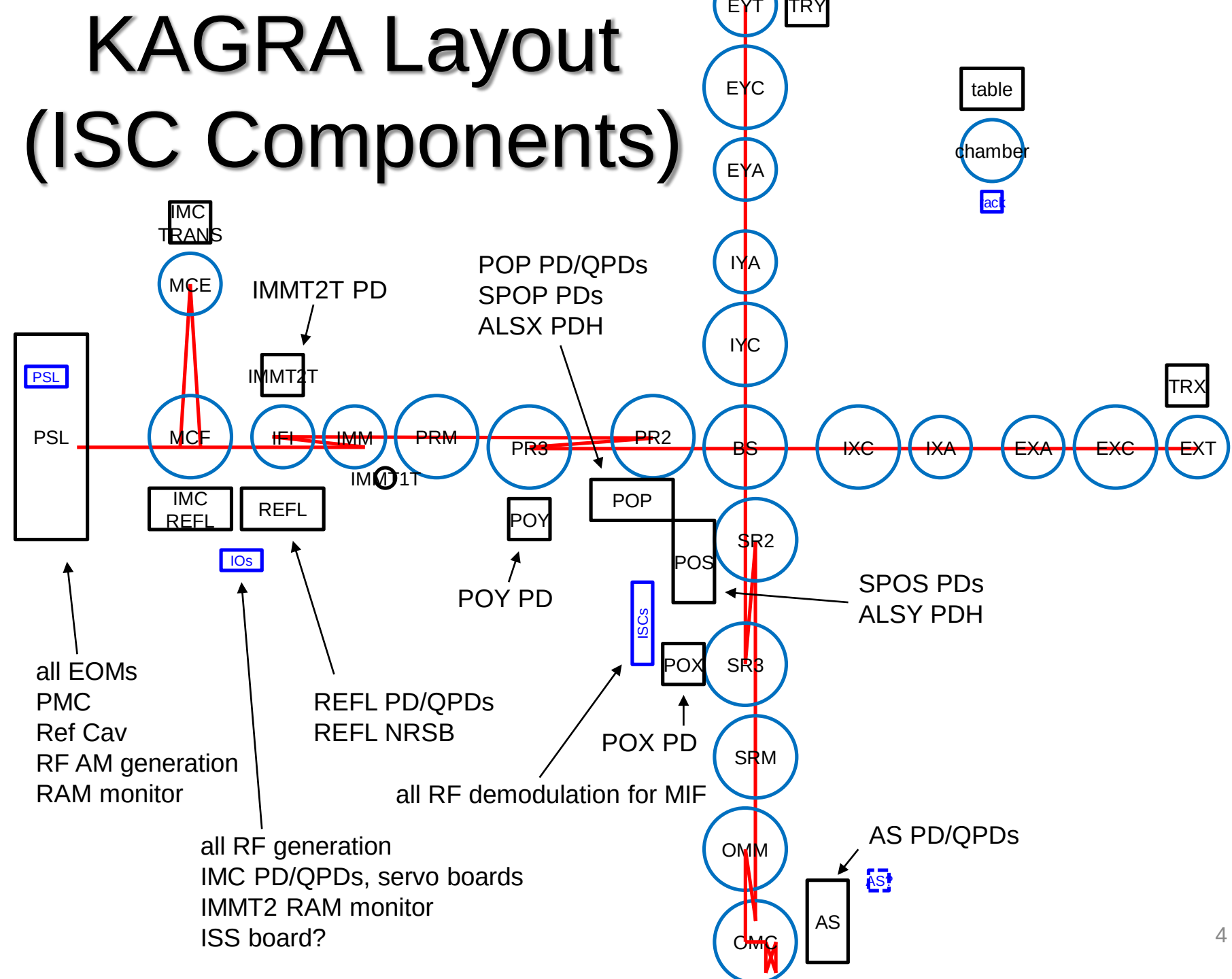
References

- List of PDs and QPDs
<https://docs.google.com/spreadsheets/d/1EcuZOQP8yrD3s7no9PPGSxSD0V3NGAFvx799leWH-1U/edit#gid=2019224000>
- List of electronics for ISC
<http://gwwiki.icrr.u-tokyo.ac.jp/JGWwiki/KAGRA/Subgroups/MIF/AEL>
- ISC Electrical Components Layout
<https://gwdoc.icrr.u-tokyo.ac.jp/cgi-bin/private/DocDB/ShowDocument?docid=2986>
- RF Cabling Policy
<https://gwdoc.icrr.u-tokyo.ac.jp/cgi-bin/private/DocDB/ShowDocument?docid=3190>
- Cable lengths for iKAGRA ISC
<https://gwdoc.icrr.u-tokyo.ac.jp/cgi-bin/private/DocDB/ShowDocument?docid=3028>

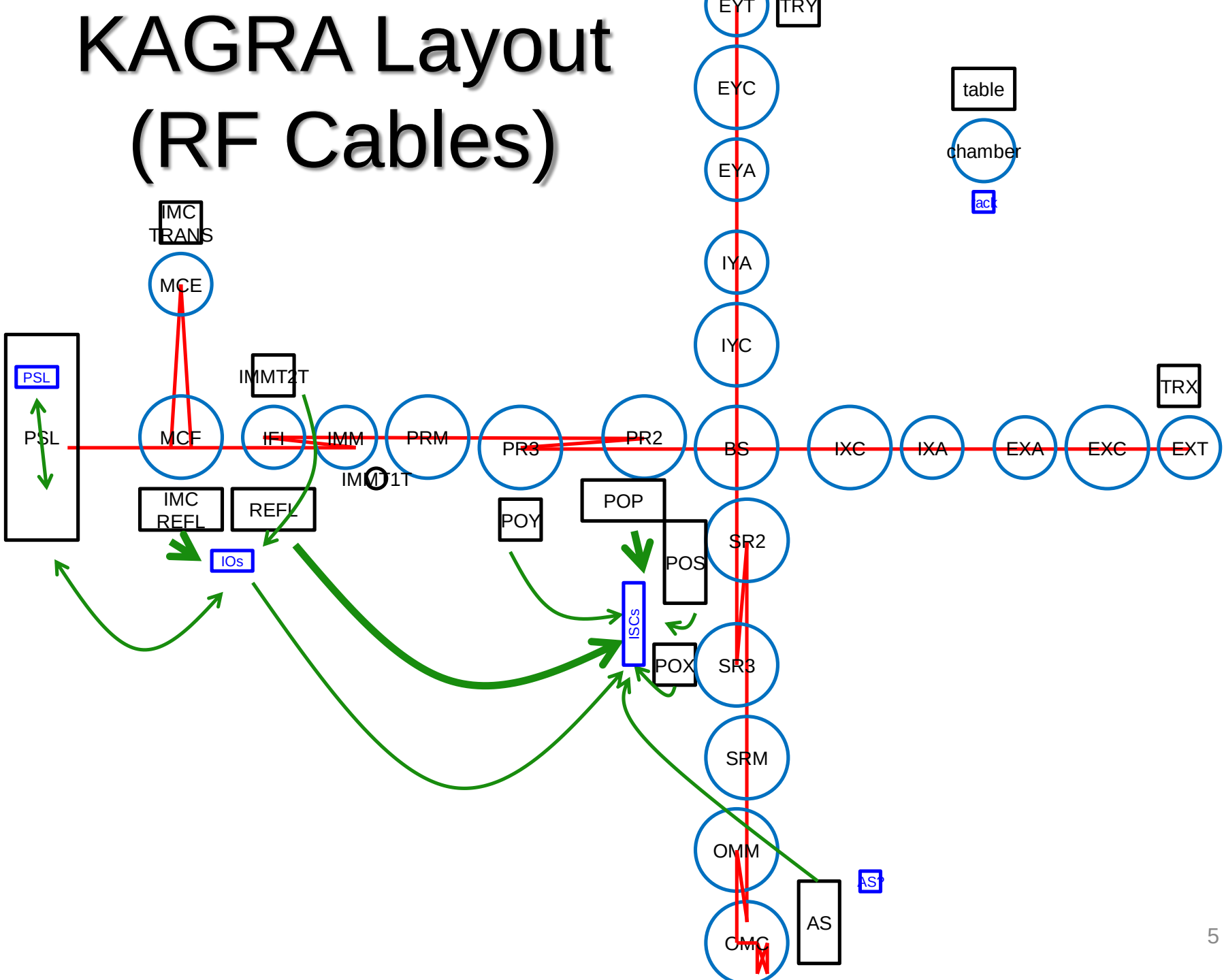
KAGRA Layout (Not Complete)



KAGRA Layout (ISC Components)



KAGRA Layout (RF Cables)



Number of RF Cables

- PSL table ↔ PSL rack **2 cables** 15MHz EOM, 51.72MHz EOM
- PSL table ↔ IOO rack **13 cables** ALSX EOM, ALSY EOM, ALSX BEAT, ALSY BEAT, f2/fIMC EOM, f1/f3 EOM x2, AM delay line RFPD, RAM MON(fIMC/spare)
- IMC REFL table ↔ IOO rack **9 cables** IMCR(fIMC), IMCR QPDx2(fIMC)
- REFL table ↔ ISC rack **20 cables** REFL(f1/f2), REFLNRSB(f3-f1/f3-f2), REFL QPDx2(f1/f2)
- IMMT2 table ↔ IOO rack **2 cables** RAM MON(f1/f2)
- POP table ↔ ISC rack **21 cables** POP(f1/f2), SPOP(2*f1/2*f2), POP QPDx2(f1/f2), ALSX PDH
- POS table ↔ ISC rack **3 cables** SPOS(2*f1/2*f2), ALSY PDH
- POX table ↔ ISC rack **3 cables** POX(f1/f2)
- POY table ↔ ISC rack **3 cables** POY(f1/f2)
- AS table ↔ ISC rack **9 cables** AS(f1), AS QPDx2(f1)
- IOO rack ↔ ISC rack **6 cables** f1, f2, 2*f1, 2*f2, f3-f2, f3-f1
- Misc. intra-rack, intra-table **~100 cables ?**

Cables for in-vac RF PDs and
RF QPDs not included!!

Length of RF Cables

- PSL table ↔ PSL rack **5 m**
- PSL table ↔ IOO rack **30 m**
- IMC REFL table ↔ IOO rack **10 m** (measured to be ~7 m)
- REFL table ↔ ISC rack **50 m** (measured to be ~45 m)
- IMMT2 table ↔ IOO rack **10 m** (measured to be ~ 8 m)
- POP table ↔ ISC rack **20 m** (measured to be ~19 m)
- POS table ↔ ISC rack **20 m** (measured to be ~14 m)
- POX table ↔ ISC rack **20 m** (measured to be ~15 m)
- POY table ↔ ISC rack **40 m** (measured to be ~36 m)
- AS table ↔ ISC rack **40 m** (measured to be ~37 m)
- IOO rack ↔ ISC rack **50 m** (measured to be ~45 m)
- Misc. intra-rack, intra-table **1 m, 2 m**

Cables for in-vac RF PDs and
RF QPDs not included!!

Cables to Purchase

- HUBER+SUHNER S04272B SMA-SMA
 - 1 m: 50 cables
 - 2 m: 50 cables
 - 5 m: 10 cables (at least 2)
 - 10 m: 30 cables (at least 11)
 - 20 m: 40 cables (at least 27)
 - 30 m: 30 cables (at least 13)
 - 40 m: 20 cables (at least 12)
 - 50 m: 40 cables (at least 26)
- (roughly 660 man-yen, 2 months)

Comment from Kiwamu

- aLIGO uses flexible cables and SMA-SMA patch panels for RF PD and RF QPDs
 - Heliax cables are used only for RF distribution
 - Number of connectors, not cable length, matters for losses
- We will also use flexible SMA cables for RF PD and RF QPDs

**Cables for in-vac RF PDs and
RF QPDs not included!!**

Cabling Photos

PSL table ↔ IOO rack

PSL

IOO racks

2 m

IMC REFL table ↔ IOO rack

クリーンエリア
— ounスーツ着用者以外
入禁止
東京大学

IMC REFL

IOO racks

REFL table ↔ ISC rack



REFL (not seen)

100 PR area to ISC racks

POY table
(not installed yet)

2 m

Cable rack under
PR2-PR3 pipe
(not installed yet)

BS area to ISC racks



POP table

ISC racks

ISC racks
(not installed yet)

ISC racks

ISC racks
(not installed yet)

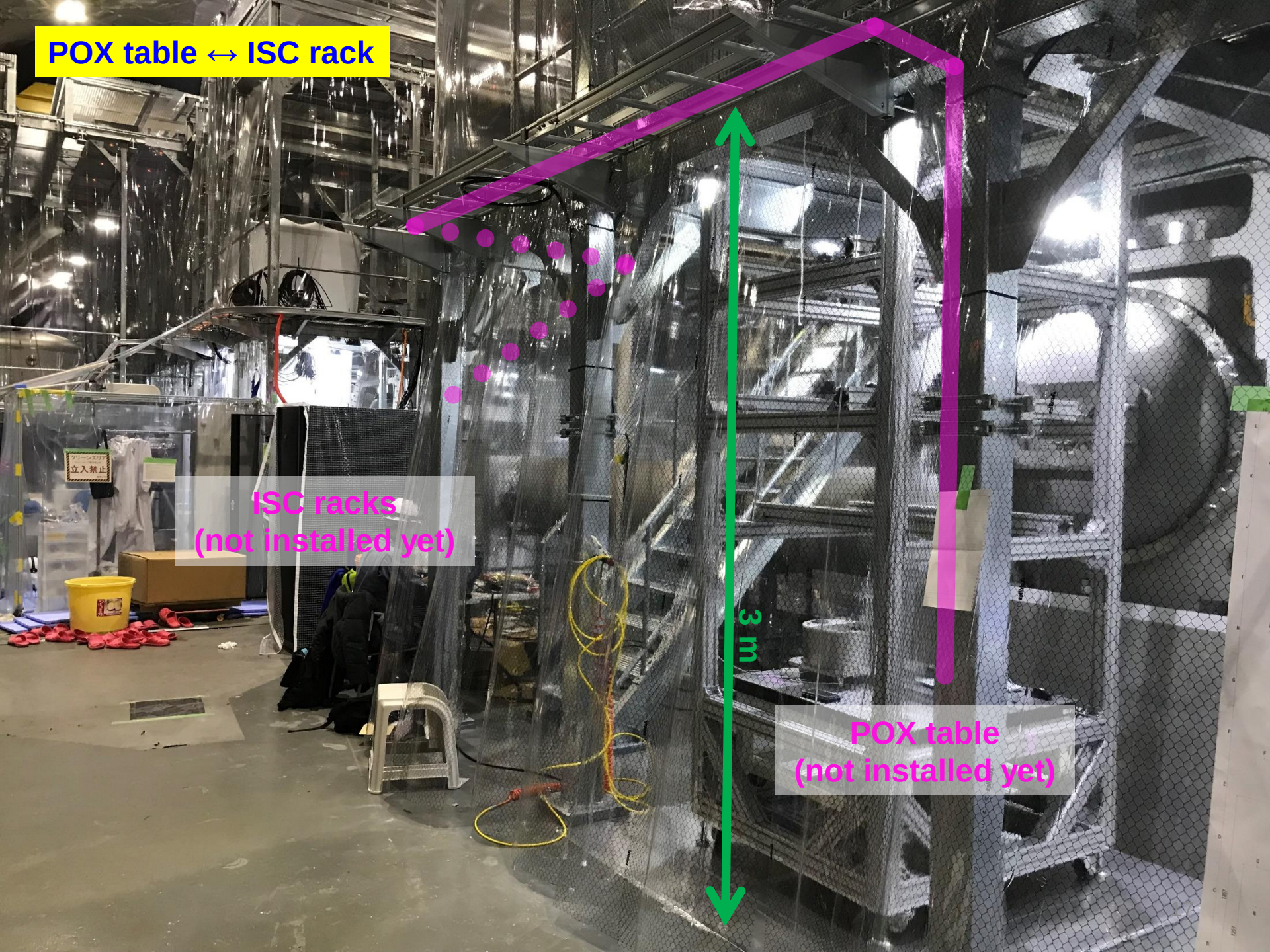
POS table
(not installed yet)

POX table ↔ ISC rack

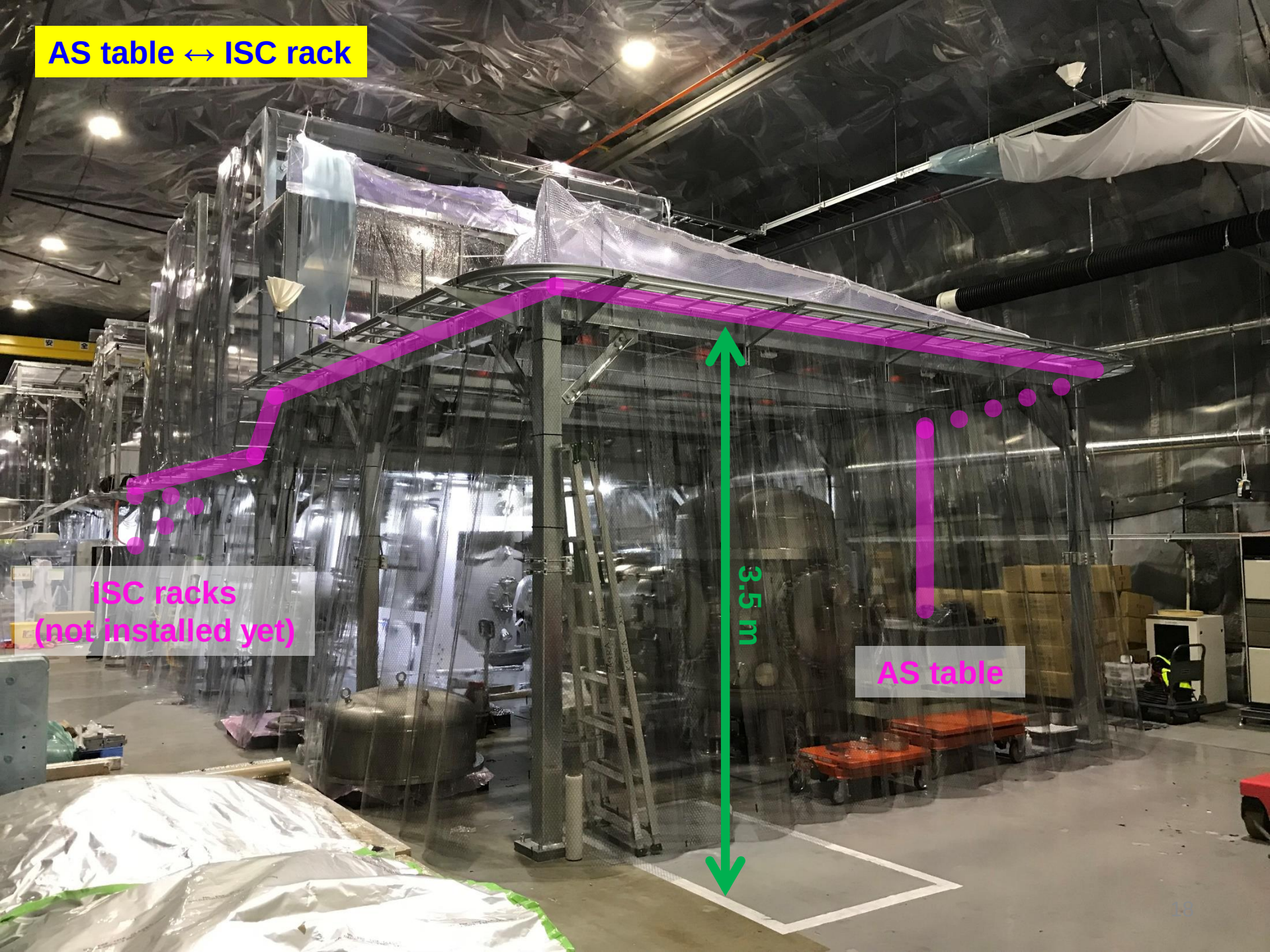
ISC racks
(not installed yet)

3 m

POX table
(not installed yet)



AS table ↔ ISC rack



ISC racks
(not installed yet)

3.5 m

AS table