

List of RF Cables to Purchase for Early Phase of bKAGRA

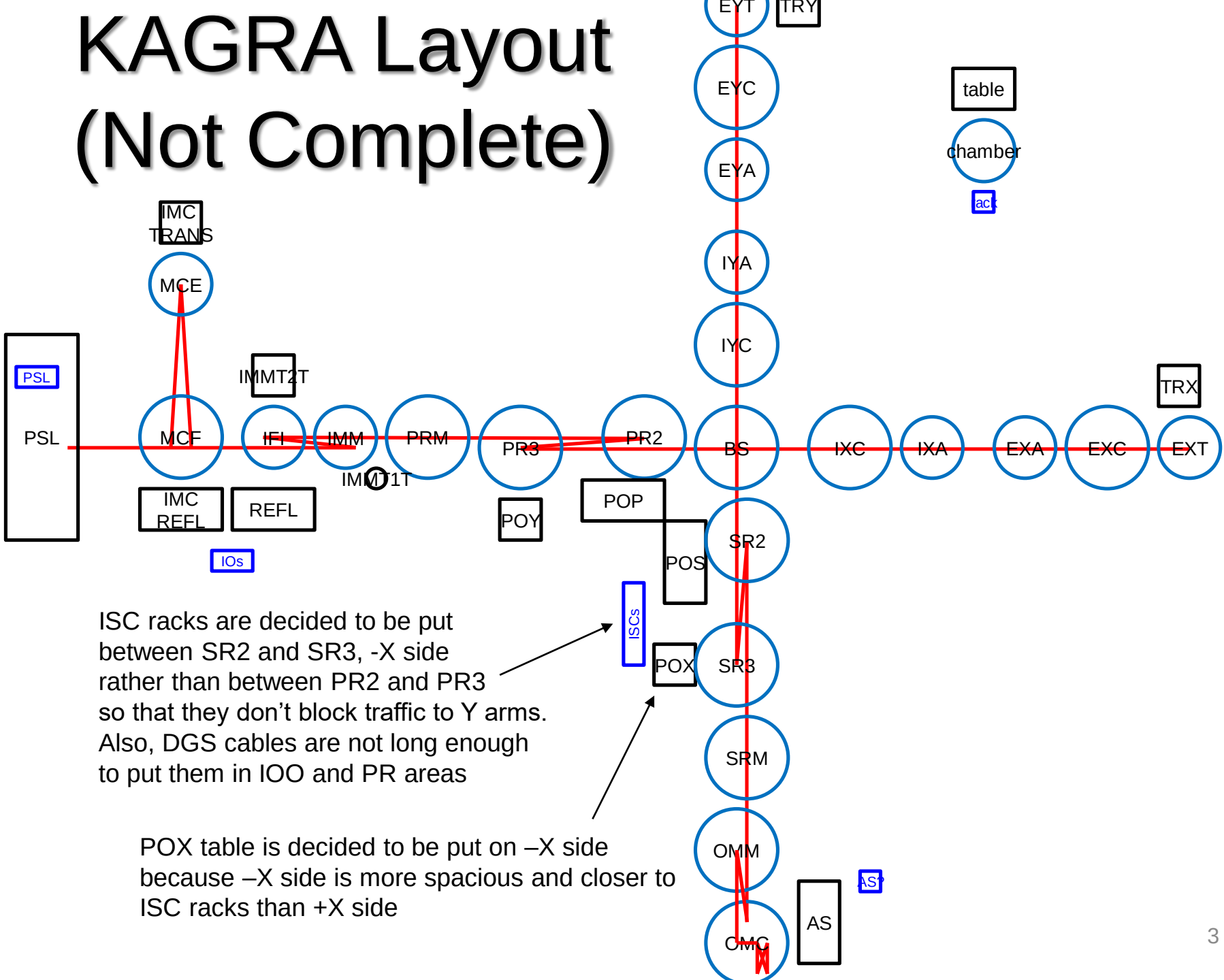
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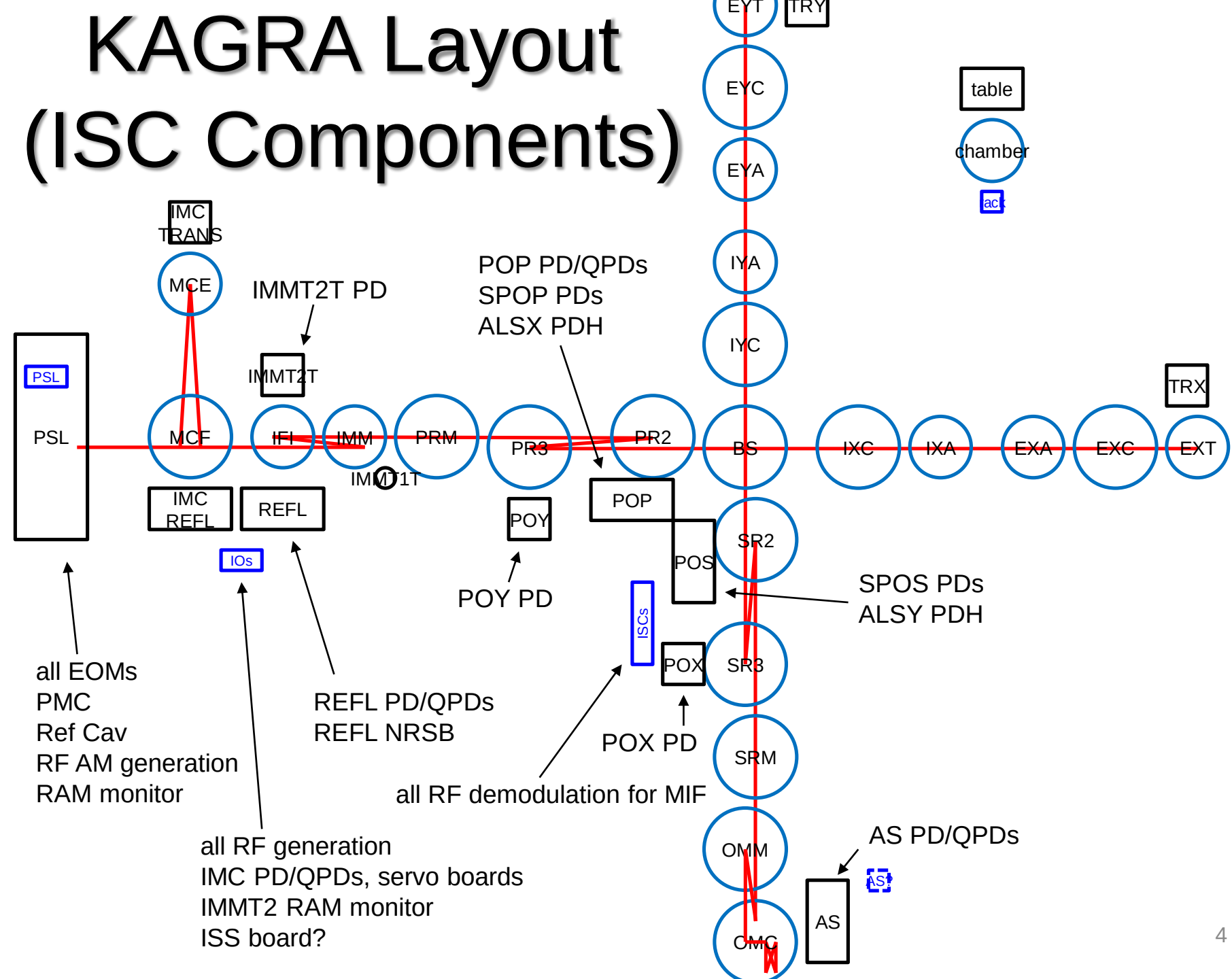
References

- 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>

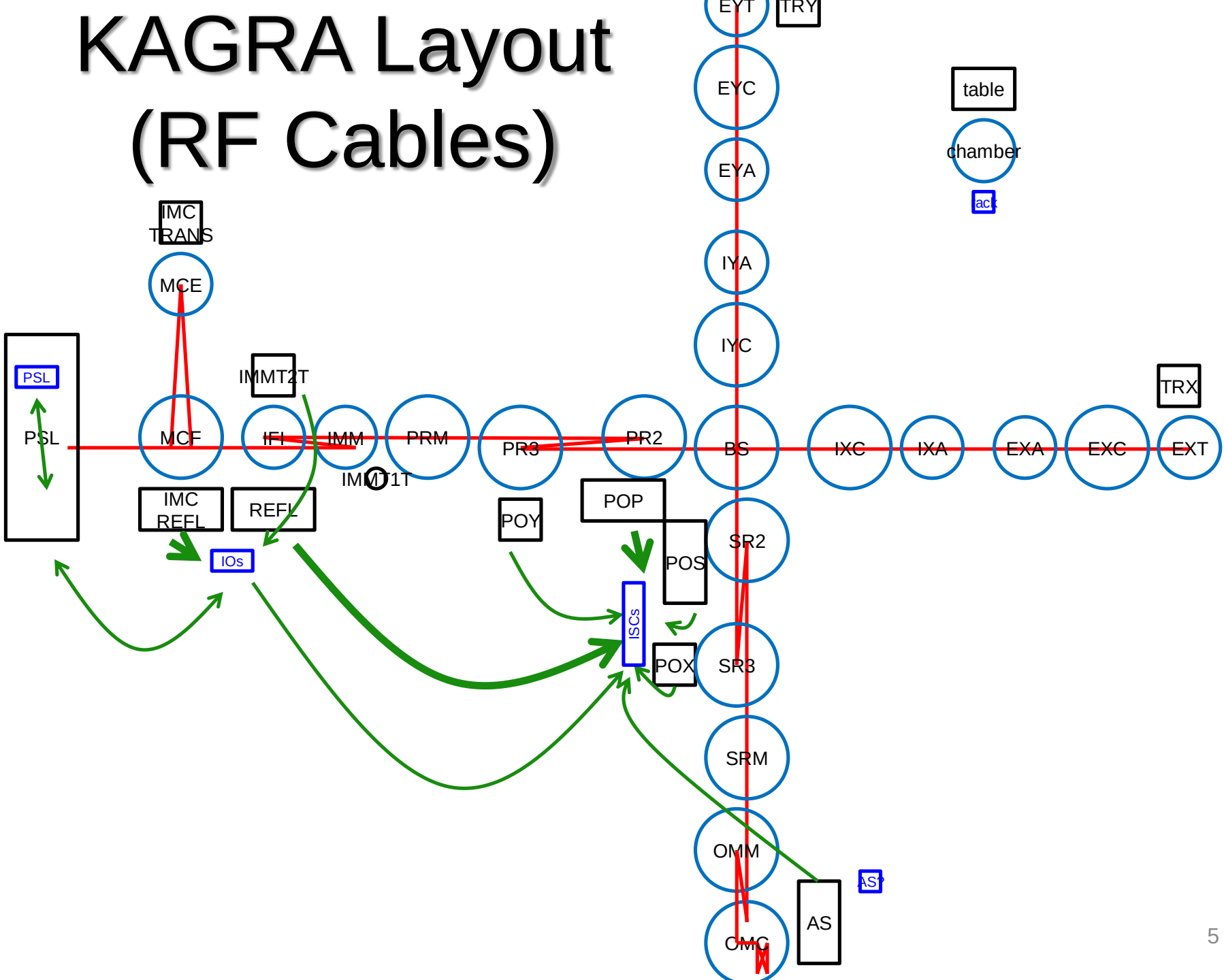
KAGRA Layout (Not Complete)



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 $\leftrightarrow$ IOO rack

PSL

IOO racks

2 m

IMC REFL table ↔ IOO rack

クリーンエリア
—ンスーツ着用者以外
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

POS table
(not installed yet)

ISC racks
(not installed yet)

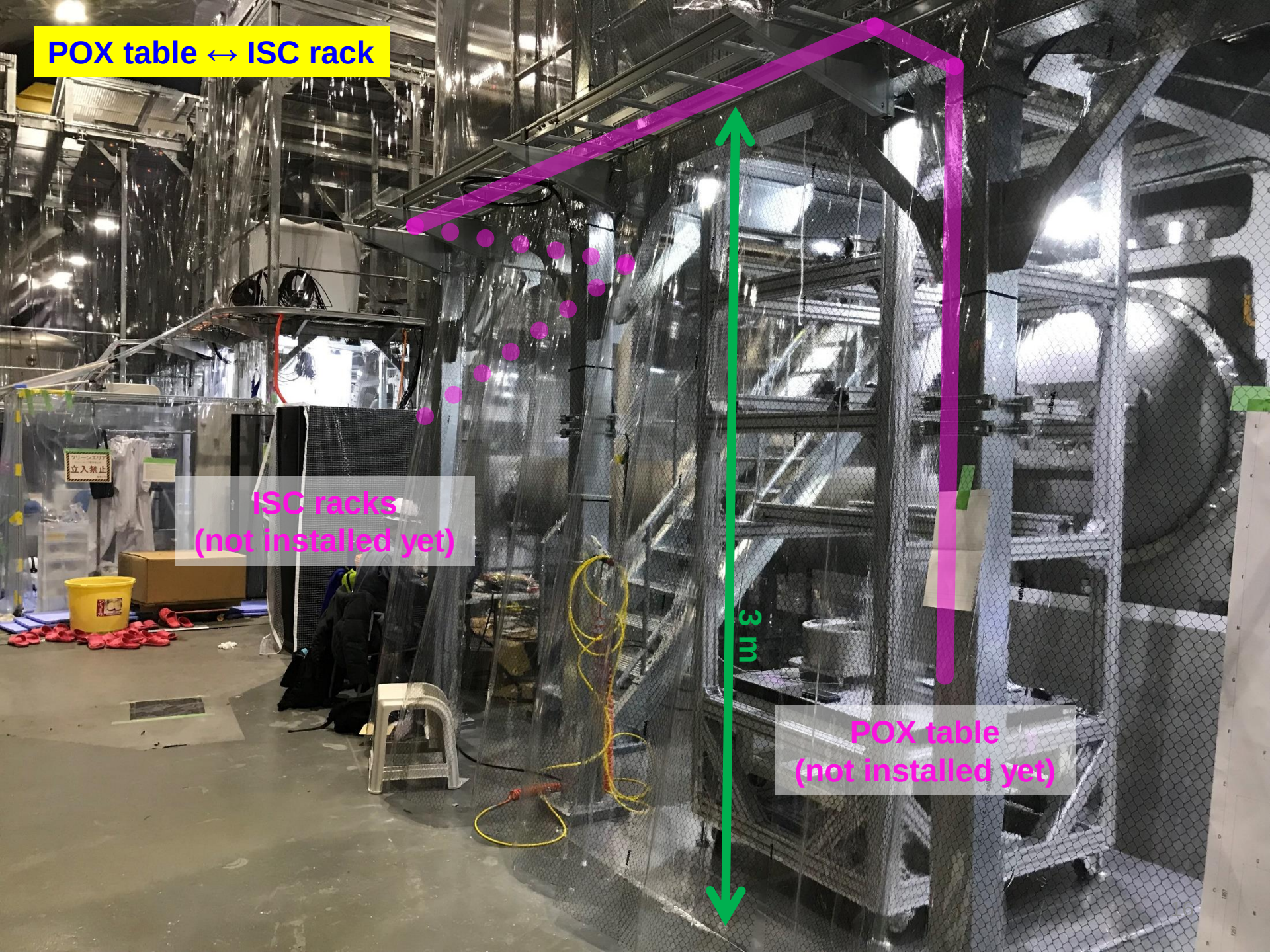
3m

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