Update from MIR subgroup

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On behalf of MIR subgroup

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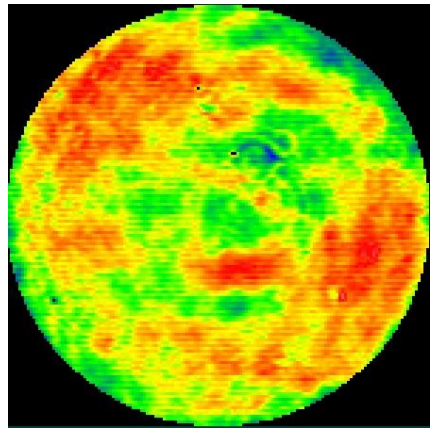
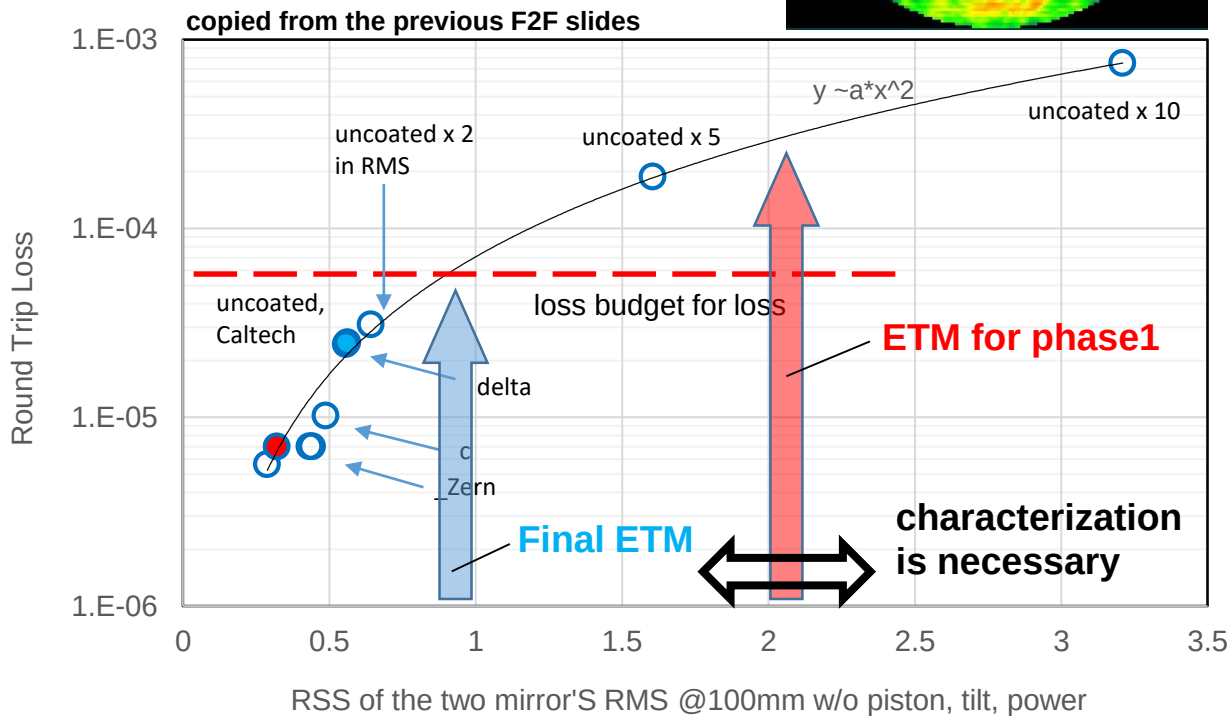
@ Toyama University

ETMs for early phase(s)

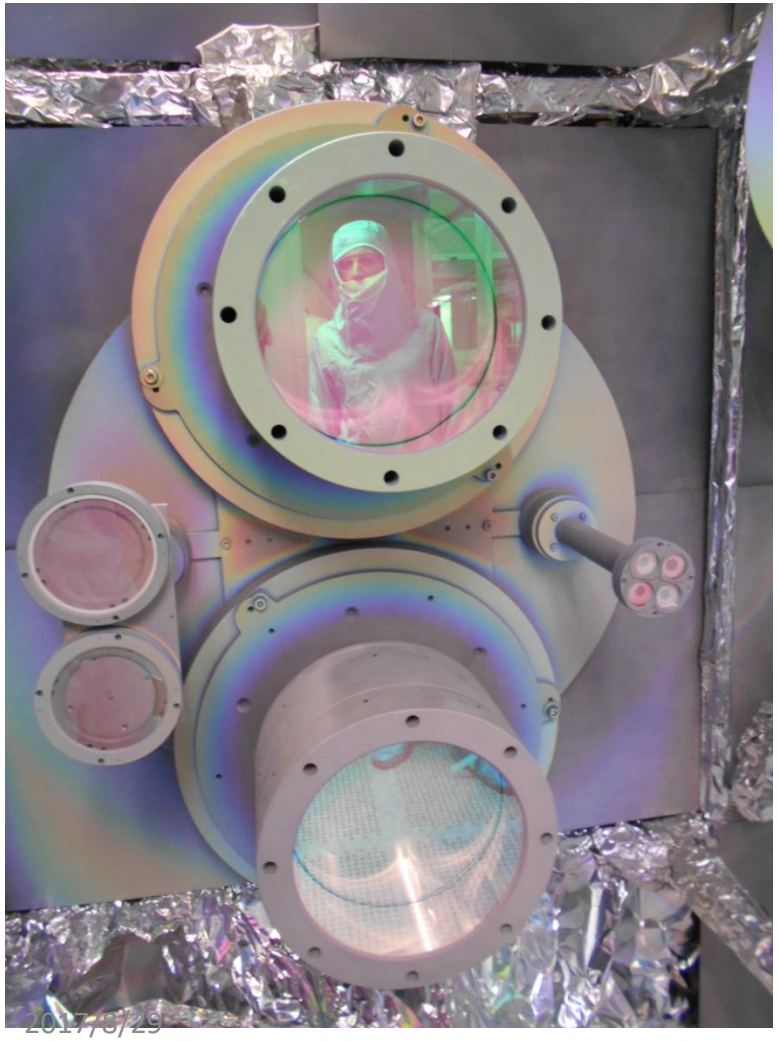
- ETMY will be completed this week
- First Contact will be applied and shipped ASAP for ear gluing
- It is likely that characterization of ETMY will be skipped
- ETMX will follow with several days difference
- ETMX must be characterized since this is very important information to estimate cavity performance and make decision when these ETMs should be used until

figure map w/ 633nm of uncoated ETMY @100mm (vendor data)



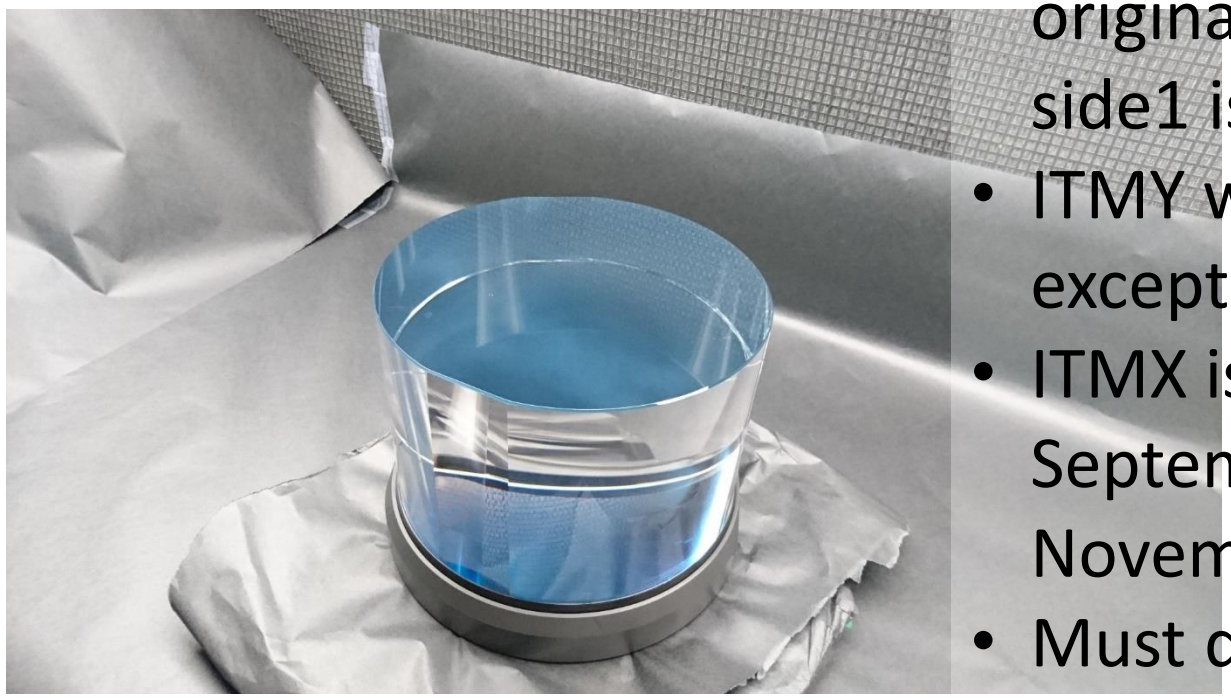


ETMs for the later phase(s)



- Currently being coated
- HR coating was successful, but non-negligible spherical aberration will be added as reported in the last F2F (uncoated 0.3nm RMS -> coated 0.6~0.7nm RMS @140mm aperture in RMS)
- Expected delivery date is the end of September
- Full characterization will be made in October

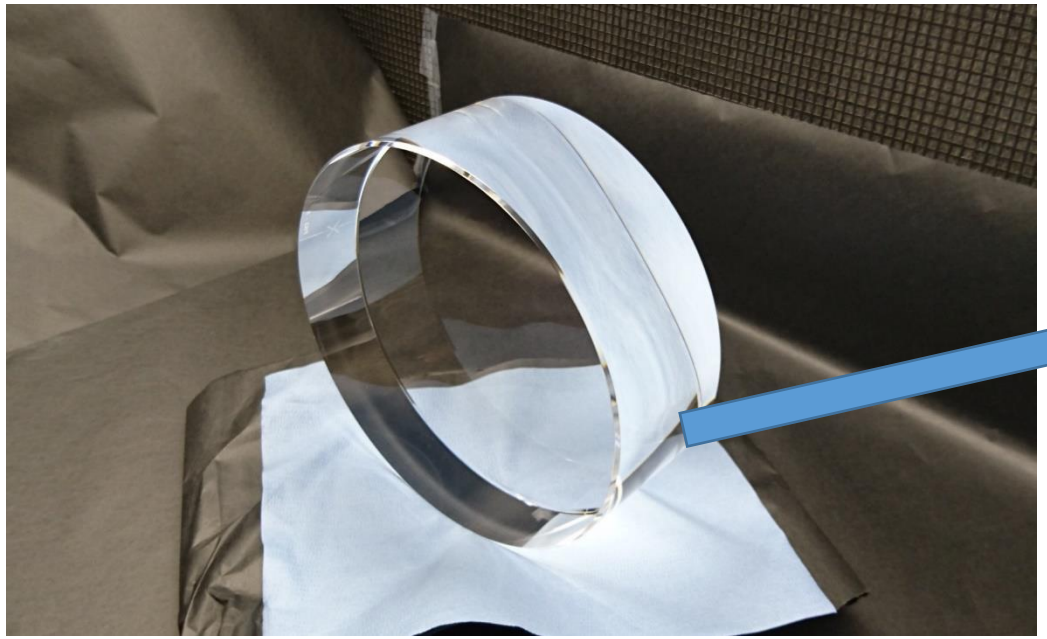
ITMs

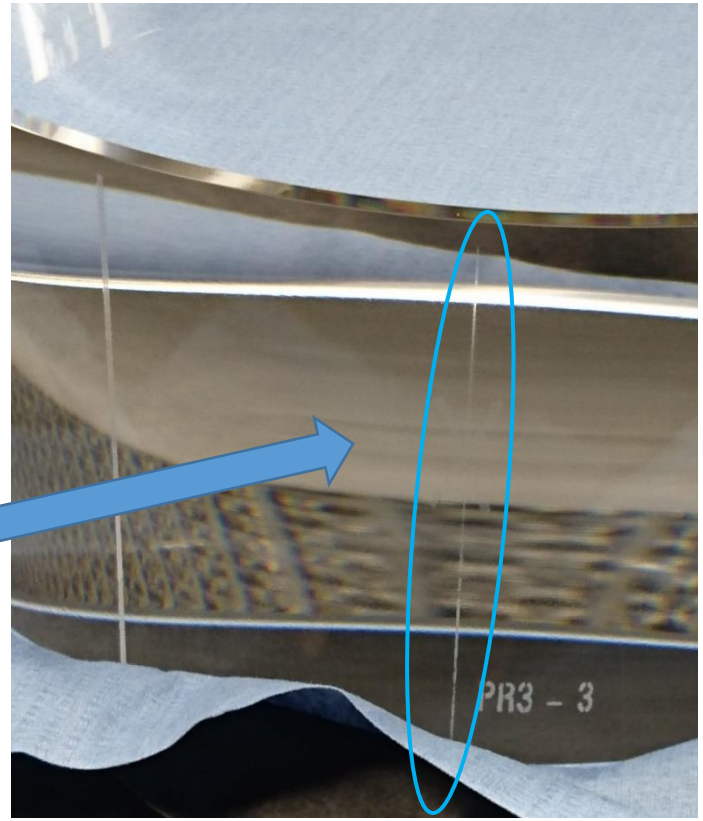


ITMX @ vendor, photo taken on Aug 23 2017

- ITMX is not completed yet due to DI water issue. It is three weeks behind from the original plan. Currently the final IBF for side1 is being processed
- ITMY was outsourced to a company in CA except the final processes such as IBF
- ITMX is scheduled to be completed in September while ITMY is in the end of November
- Must deliver the optics to the coater by Jan 2, 2018 to have them complete the optics within FY 2017
- Full characterization will be made in April - May

PR3 – new one





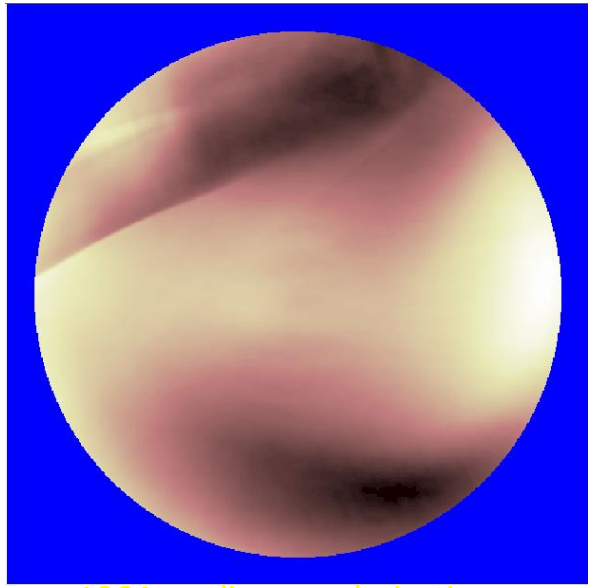
- All specifications are satisfied (better than the original)
- One minor issue exists – one extra line was mistakenly drawn on the barrel
- The optic will be picked up by the coater this week
- Coating will be completed in October(with some margin)

OMMTs

- PO was issued (both polishing and coating) to a company in the US
- Blanks were damaged during shipment
- Thickness will be smaller (~5mm) to make use of the blanks. We are discussing impact among a few subgroups
- Delivery is expected near the end of FY 2017 if we keep the PO

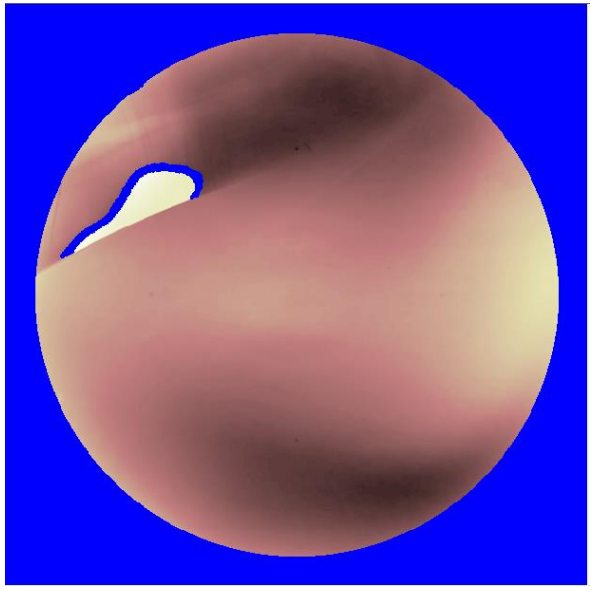
Inhomogeneity (review in Pathfinder)

CIT Results, Power Removed

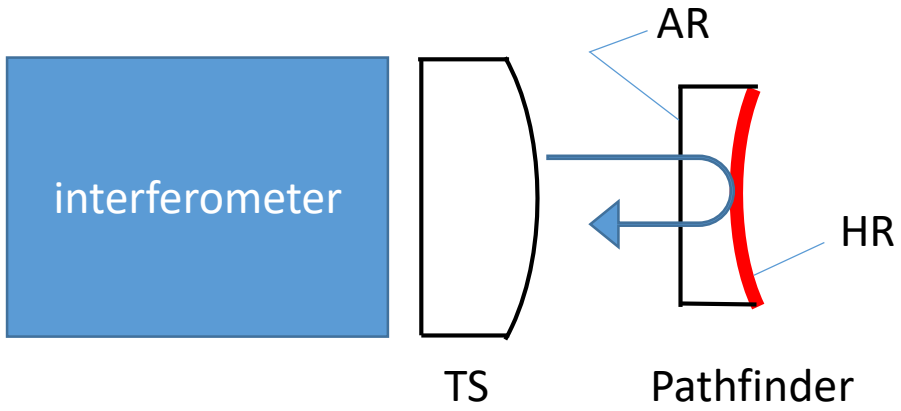


1064nm, linear polarization

Vendor Results, Power Removed

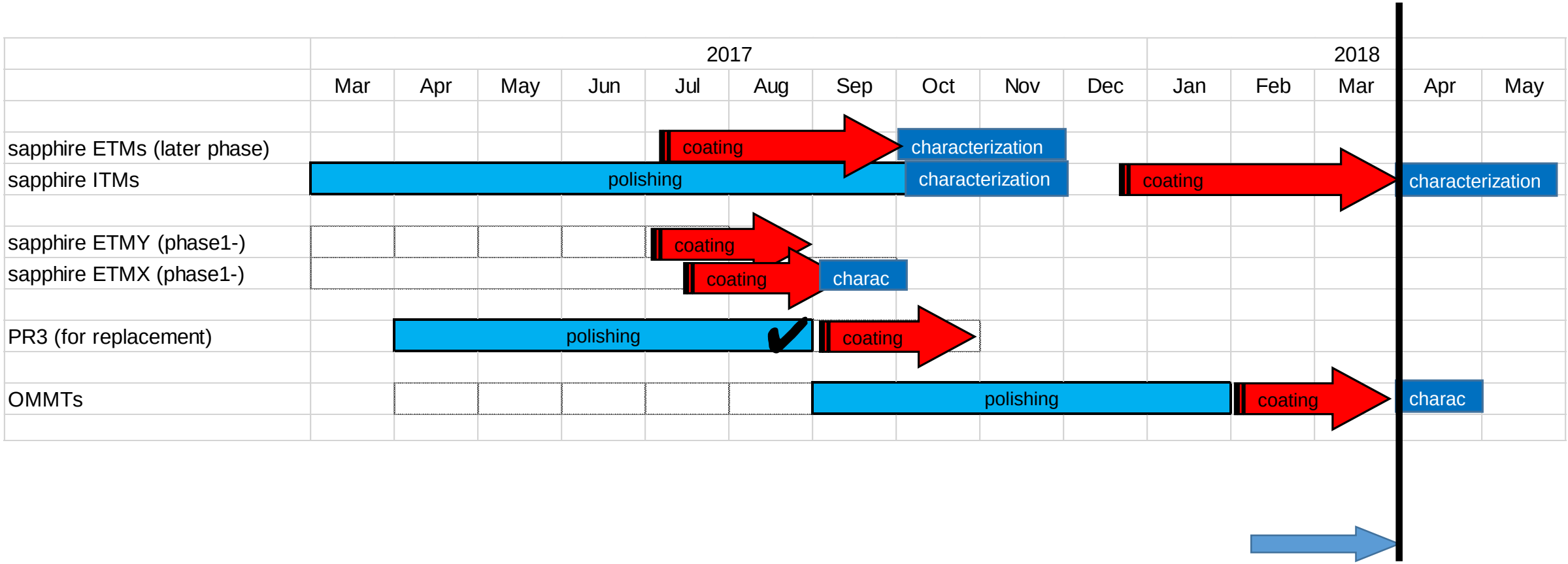


633nm, elliptical polarization



- Some discrepancy between Caltech and Vendor measurement in HR through AR, such as discontinuous region that only appears in vendor's data, power term magnitude
- We are checking data and re-measuring this in both locations
- Need to solve this problem before moving on to inhomogeneity correction

schedule



- Fabrication should be completed within FY 2017

summary

- Fabrication of sapphire optics is in progress
- Especially, ETMY is going to be completed this week
- PR3’s polish is done and will be picked up this week for coating
- Fused silica blanks for OMMTs got damaged, and it is likely that the size will be slightly smaller if we make use of the material
- Inhomogeneity of sapphire bulk is being double checked since the information is essential for IBF correction on side2 of ITMs
- Fabrication of all optics should be completed by the end of Mar 2018