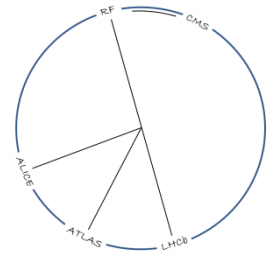
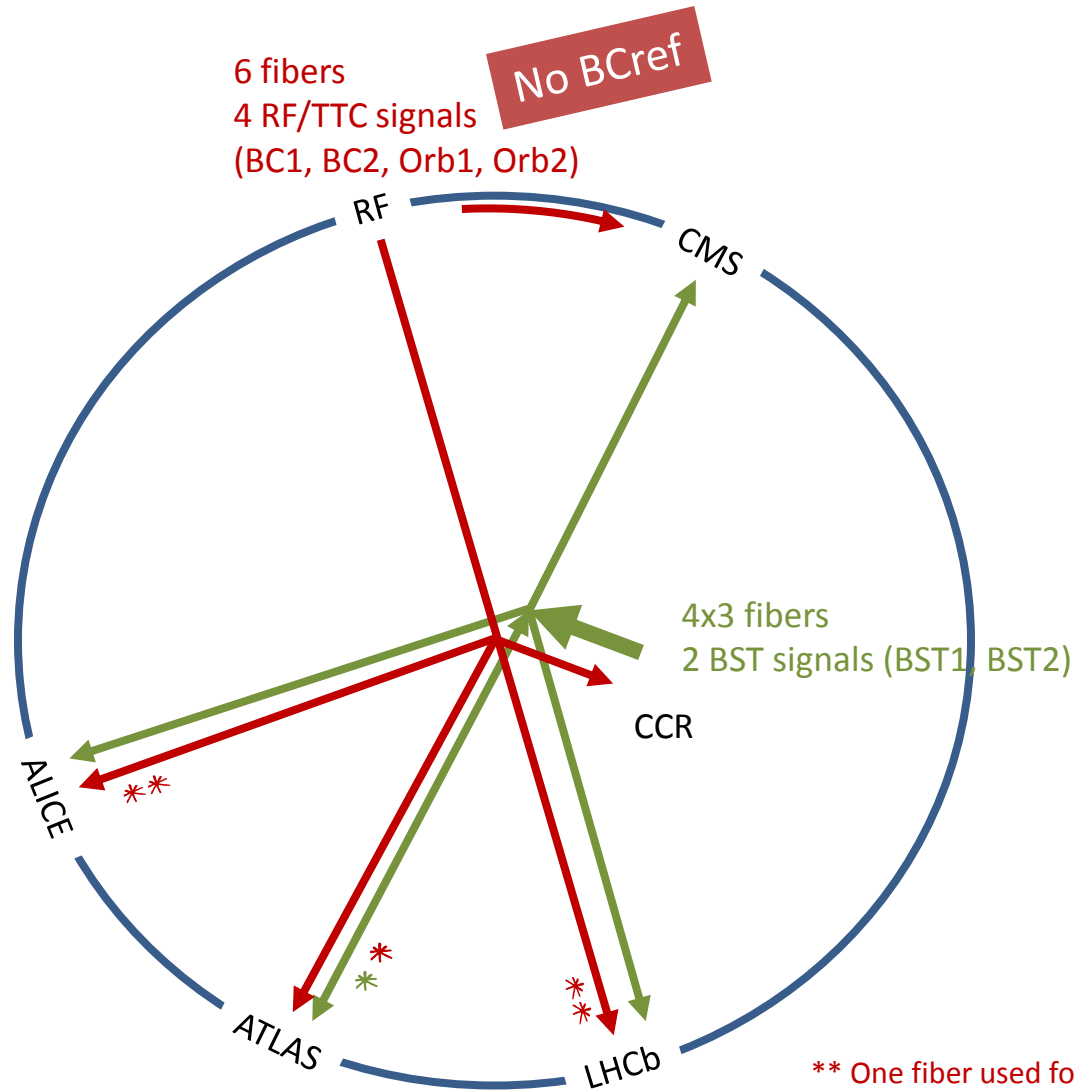
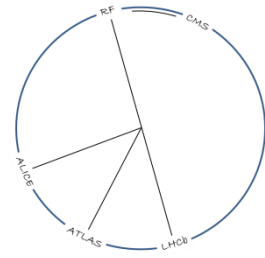


Outline



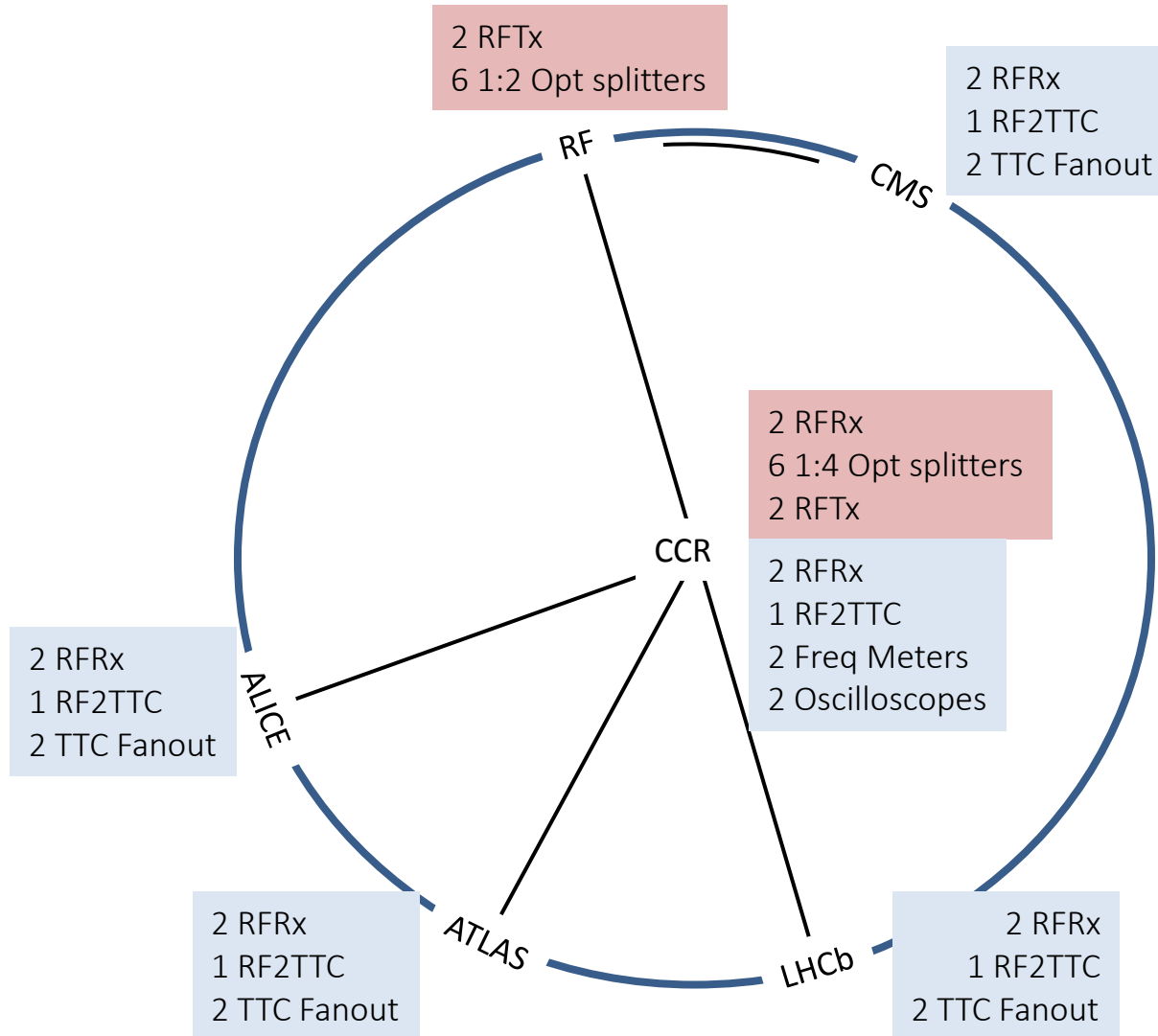
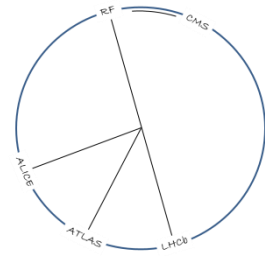
- Backbone
- RF2TTC crate
- RFRx
- RF2TTC
- TTC Fanout

RF-TTC Backbone

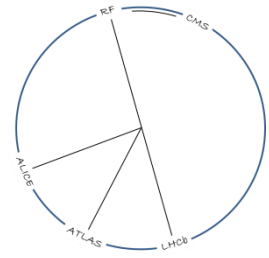


- ** One fiber used for the Sunglasses Project
- * One fiber used for drift measurement
- * One fiber used for drift measurement

RF-TTC Backbone

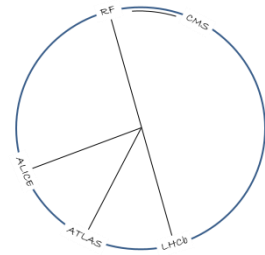


RF-TTC Crates



- Crates
 - Standard “LHC crates” (6U VME64x) for ATLAS, CMS, LHCb
 - Special water cooled crate for ALICE
- Crate Controller:
 - ALICE: VP315/317 from CCT
 - ATLAS: VP110 from CCT
 - CMS: CAEN PCI-controller card A2818 + V2718 VME-PCI optical bridge
 - LHCb: CAEN V1718 VME-USB bridge
- Setups with LHC crates and VP110 are available in the CCR and in the lab for monitoring & test purpose

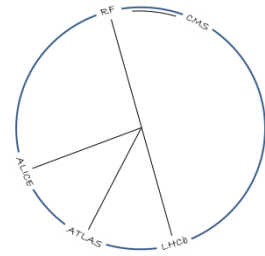
RFRx modules status



| RFRx | ALICE | ATLAS | CMS | LHCb | TTC Lab | Total |
|------|-------|-------|-----|------|---------|-------|
| | 3 | 3+1 | 3 | 3 | 2+6 | 15+6 |

- 6 extra modules have been ordered for the TTC lab (production now).
- For the RFRx, the spares, maintenance and support are handled by the RF. Several production campaigns have been relaunched since the first one, as these modules are pretty used by the RF (in various configurations, not necessarily with the TRR modules).
- In case of problem with your RFRx:
 - check the TTCpage1/ LHC RF timing Vistar to see the status of the signals at the CCR and at the other experiments
 - check the modules configuration (for ex the threshold value), check the optical power
 - use your spare inputs/modules
 - only in case of major issue, call the CCC. The RF piquet must have the access rights to intervene on the RFRx modules of your experiment if necessary. The piquet members need also to have access to the control rooms upstairs, as they will initially go there before doing anything.

RF2TTC modules status

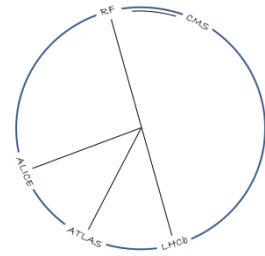


| RF2TTC | ALICE | ATLAS | CMS | LHCb | Spares | Total |
|--------|-------|-------|-----|------|--------|-------|
| | 2+1 | 2 | 2 | 1 | 9+1 | 18 |

- Latest Firmware version: 25.06.2009
- All the spares (+ some modules from ALICE, CMS and LHCb have been retested this autumn). The testbench is available in case of need or to update the fw.
- One issue has been reported and studied: **when NO clock is available at one input of the RF2TTC, the relative QPLL may give the « Locked » status.** This is due to the fact that the QPLL reacts differently if the input level is « 1 » or « 0 ».
 - If « 0 », it declares itself « unlocked » and scans the frequency range
 - If « 1 », it declares itself « locked » and drift slowly to the end of the analog range...and stays there.

⇒ don't use the « locked » status of the QPLL to detect if the 40MHz is around – rather use the RFRx freq registers.
- The issue of high jitter detected by ALICE usually at the end of Ions ramps has been reproduced and has been identified as a loss of lock of the QPLL (centered at the flat bottom frequency). Solution: reset the QPLL chain at the end of the ramp.

TTCFanout modules status



| TTC Fanout | ALICE | ATLAS | CMS | LHCb | TTC Lab | Total |
|------------|-------|-------|-----|------|---------|-------|
| | 7 | 3 | 5 | 5 | 2+2 | 14 |

- 2 extra modules have been ordered for the TTClab, a few for ALICE and a few for CMX. (production now).
- Note that another design exists (CMS), much more convenient for labs, that has 5 small fanouts of 1:4 (ECL only). Very convenient to have the 2 BCs and the 2 orbits fanned out on the same modules for labs. Much less expensive as well, as the price of the Fanout modules comes from the huge number of lemos.