Upgrade of CDCFE, and CDCTRG

-CDCFE will be upgraded. Followings are motiveation.

-CDCTRG can be upgraded in this chance, too.

 -bandwidth of CDCFE<->Marger can be increased (x2~5?)

Motivation for the upgrade

- Radiation damage
  - AVAGO optical module for the trigger output
  - ~300Gy several years < 10 years?
- Temperature problem
- FADC
  - The rate (30MHz) seems to be too slow as looking the X-ray signal for Fe-55 source.
  - Small pedestal spread
  - Time walk correction
- ASD-ASIC : basically OK
  - Smaller under shoot
  - Shorter peaking time and lower noise level
  - Slightly longer shaping time

Slide by Uno-san in last B2GM

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Schedule

-CDC schedule

- In this year,
  - More measurement using the test board
  - Submission for updated version will be done in the Dec, if we have enough budget.

- Rough schedule
  - 2023 summer : installation
  - 2022 : mass production
  - 2021 : Production of prototype readout board

-CDCTRG schedule (?)
  - 2019, 2020: design new logic, decide FPGA
  - 2021: test prototype of CDCFE (and CDCTRG Marger, UTx if needed)
  - 2021-2022: implementation of new logic
  - 2022: (mass production of CDCTRG Marger, UTx if needed)
  - 2023: installation

Possible targets for CDCTRG

-1.Reduce noise hit

-Independent tdc discriminator btw. CDC and CDCTRG

-Faster ADC (at present, ~250ns is needed for AD conversion)

-Maybe send ADC information to Marger

-2.Better resolution of tracking/z/timing

-Increase the number of wires which have drift time information

-momentum, φ: enoughly good resolution already.

-Z: should be improved to reduce BG. study is needed.

-Timing: For improve z, study is needed.

-3.Reconstruct more tracks with new trigger algorithm

-Low momtum track, Pt<~0.3GeV

-Short (forward/backward going) track

-Displaced vertex track

-Feazibility study and evaluation of physics importance are needed.

-New idea and feasibility study are very welcome, especially for 2 and 3