eRD23 Summary

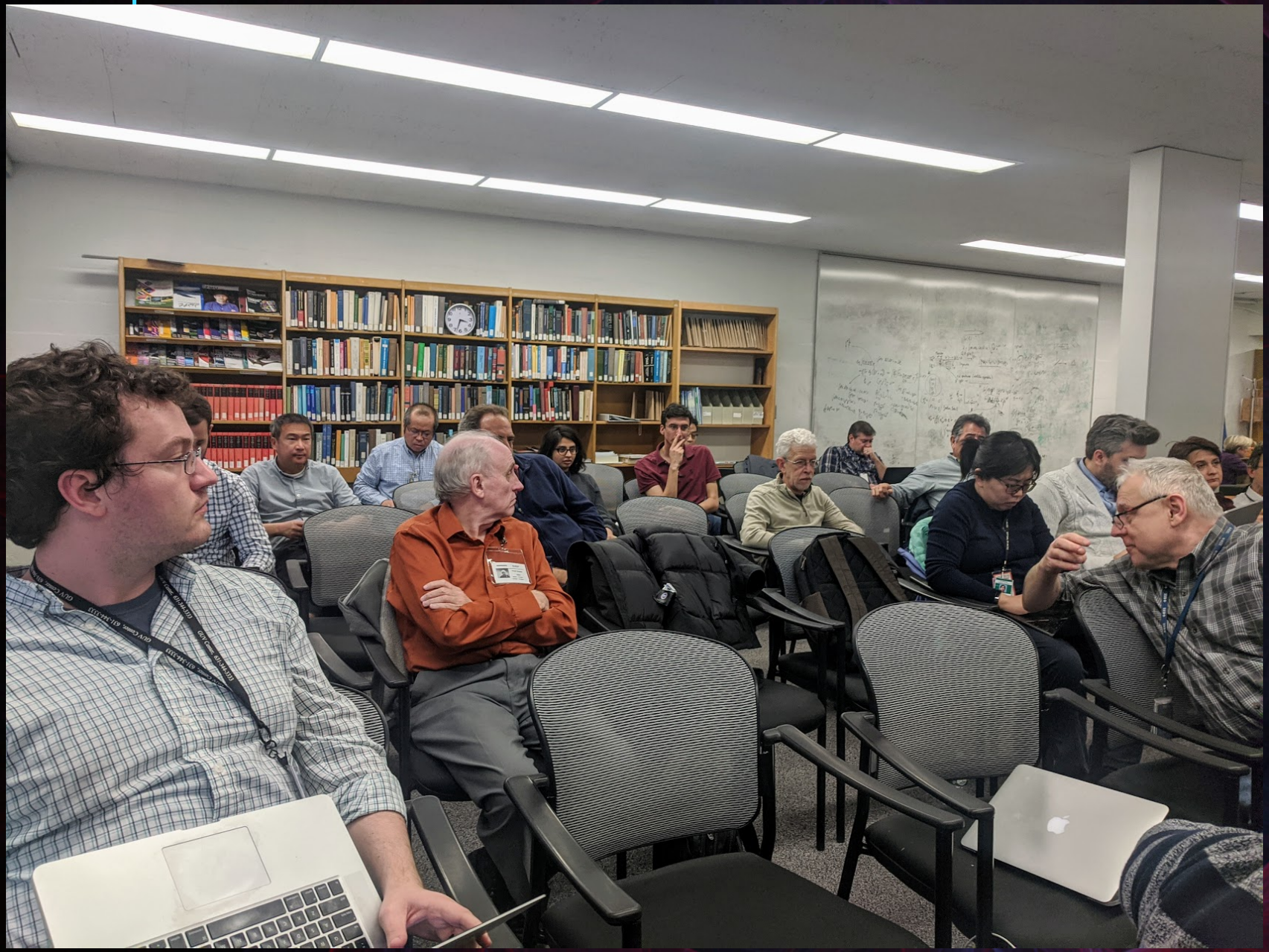
Jan C. Bernauer

Streaming Readout VI, 2020

RBRC
RIKEN BNL Research Center

Stony Brook
University

Workshop



Workshop

- Supported by the Riken BNL Research center
- November 13-15, 2019
- Proceedings: Talks published on DVD
- Many topics
- Many talks, but also a lot of fruitful discussion.

Interaction with Yellow report

- Marco, I, and many of you are regulars at the YR meetings.
- I had the impression from the YR meetings that NO ONE is looking at triggered readout. There is no minority report.

We need to organize our knowledge better

- To help transfer information from us to YR, detector groups, etc.
- To record what we did, and what we learned.
- To help with the progress report.
- Help collaboration between labs.
- Would be nice to get a publication out of it :)

Overleaf document

- https://www.overleaf.com/7341518614pkrtqxwvgjzg
- It has a main document, so far filled with the last progress report.
- But don't hesitate to upload other reports, as pdf or code, to add chapters, other documents, whatever.
  - Things like: My thoughts on CALO SR.
- We could also have a wiki if you prefer.

Times are moving fast

- So we got site selection.
- This shouldn't change the dynamics of this group.
- It gives a timeline, and some time pressure.

Why I think timing might be a problem

- We have plenty of examples in HEP of streaming readout. But they are at the scary side of the spectrum: Large amounts of data, a lot of online reduction.
- We actually do not have that many "real" streaming systems in operation.
- So the benefits of it all on the "good" side of the spectrum are not on display.
  - Do we "move work around". Do we make it easier? Do we make it more capable?
- YR progress is ongoing, but COVID stopped many of exp. prototyping efforts.

My worry

- We (the community) decides on detectors, semi-finalized.
- We figure out what DAQ requirements we have for this.
- We find out that these requirements are unrealistic.
  - Too expensive in cost or volume for streaming
  - Can't be read out at all
  - Development of new capabilities will take too long.
- Problem.

What can we do about it?

- Maybe this is not a problem at all?
- Help the detectors figure out their DAQ needs early on.
  - This is only successful on a small level so far.
- Proactively show concepts for possible detectors

eRD progress report

- We had a very nice progress report written up.
- Thank you to all who contributed!
- I presented at the meeting. Got the usual questions from the usual suspects.

eRD FY 2021 Call for proposals

- Deadline for continuation/renewal: June 26
- Many changes to the report layout, mostly COVID related
  - How did it affect progress
  - Running costs
  - How much could not be spend
- Biggest announcement: After FY2021 restructuring of the program.
- But also this cycle will be more directed R&D.

What was requested of us

An interesting beginning of a cost-benefit analysis of possible readout architectures focusing on minimizing custom trigger hardware and relying, as much as possible, on commercial computing for data selection is being developed within this project. The group has been actively gathering data on detector needs and various possible implementations of readout strategies with a view to, once EIC detector concepts gel, being able to start to seriously compare costs (in effort and time) of triggered, streaming and hybrid DAQ schemes. The group recognizes that some sub-detector types may require new front-end electronics in an EIC implementation. It will be important for the success of an EIC detector to ensure that this evaluation process is carried out in an unbiased manner as this conceptual design drives the eventual detailed design of the front-end and DAQ systems. The next steps planned by the group are a continuation of this data gathering phase but as the Yellow report comes into focus later this year the group should be using one or more of the emerging sub-detectors as a test case to carry through the detailed cost comparison.

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They see us as "compare triggered with streaming"

- Triggered is their default solution.
- Bias: Is there anybody considering a triggered readout?
- I'm not sure how much the YR has selected individual detector types.
- Can we pick a detector? Can we form an expert group who can think about a triggered way to read it out, and a streaming one?

What do we want?

- We haven't spend our money.
- We will hopefully spend some money for travel
  - next workshop
  - test beam times
- Any other wishes?
- I guess that the funds will be quite restricted.
- It's hard to see how they can say its too early. But I'm sure they will.

Collaboration

- There is a lot of great activity at the different labs.
- I understand that most of it is lab-focused.
- Can we do more to foster inter-lab collaboration?
  - Do we want that?
  - How?
- Maybe an interoperability project?

Next workshop

- Hopefully in person
- Fall/Winter
- SBU?