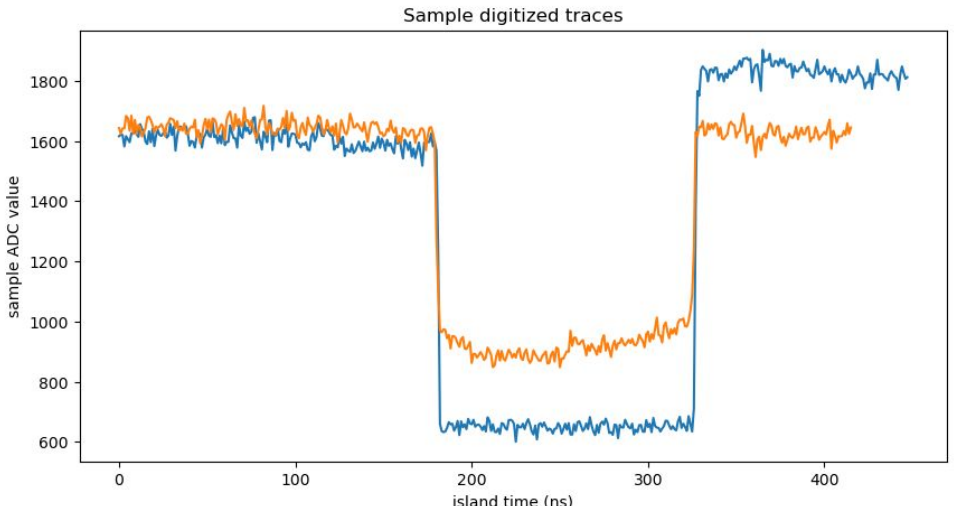
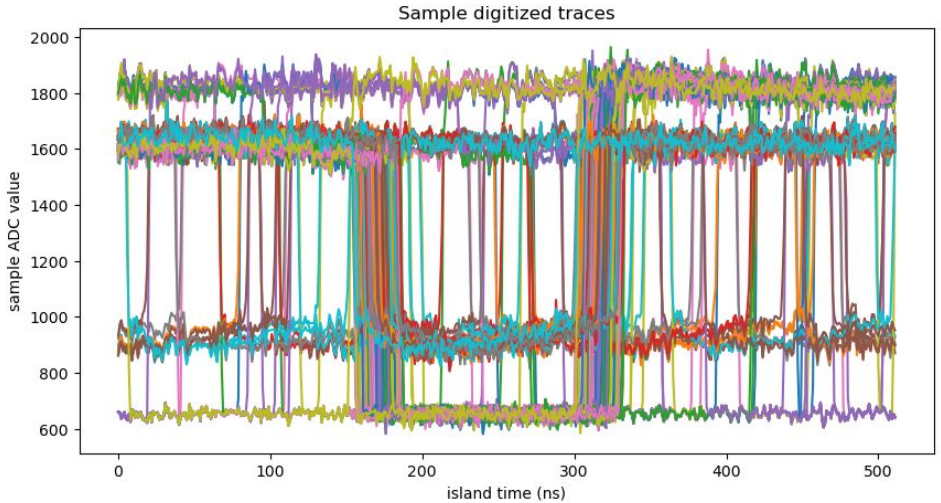
HDSoC DAQ - Updates

- Internal or “self” trigger mode implemented into MIDAS frontend
  - Rate testing soon
- HDSoC midas event unpacker created by Sean
  - Allows for easy analysis by converting midas file → root tree

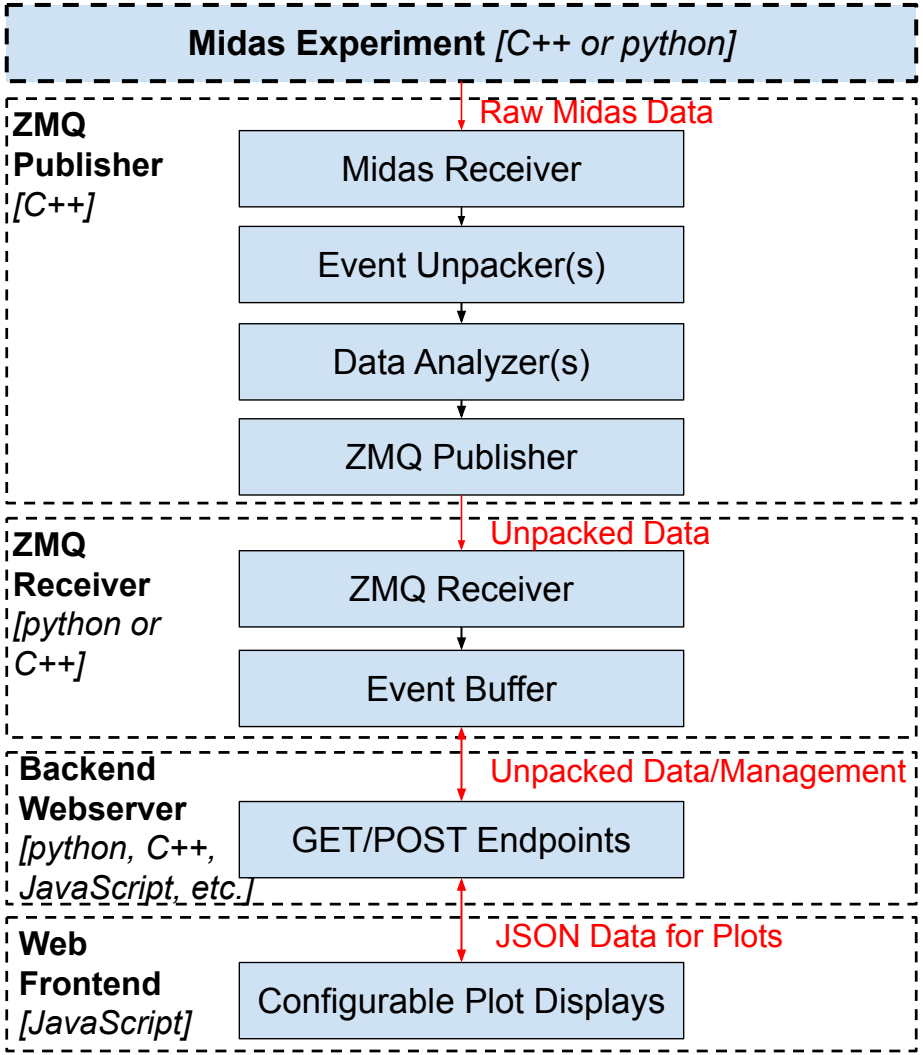




Example Digitized Pulses From Multiple Events

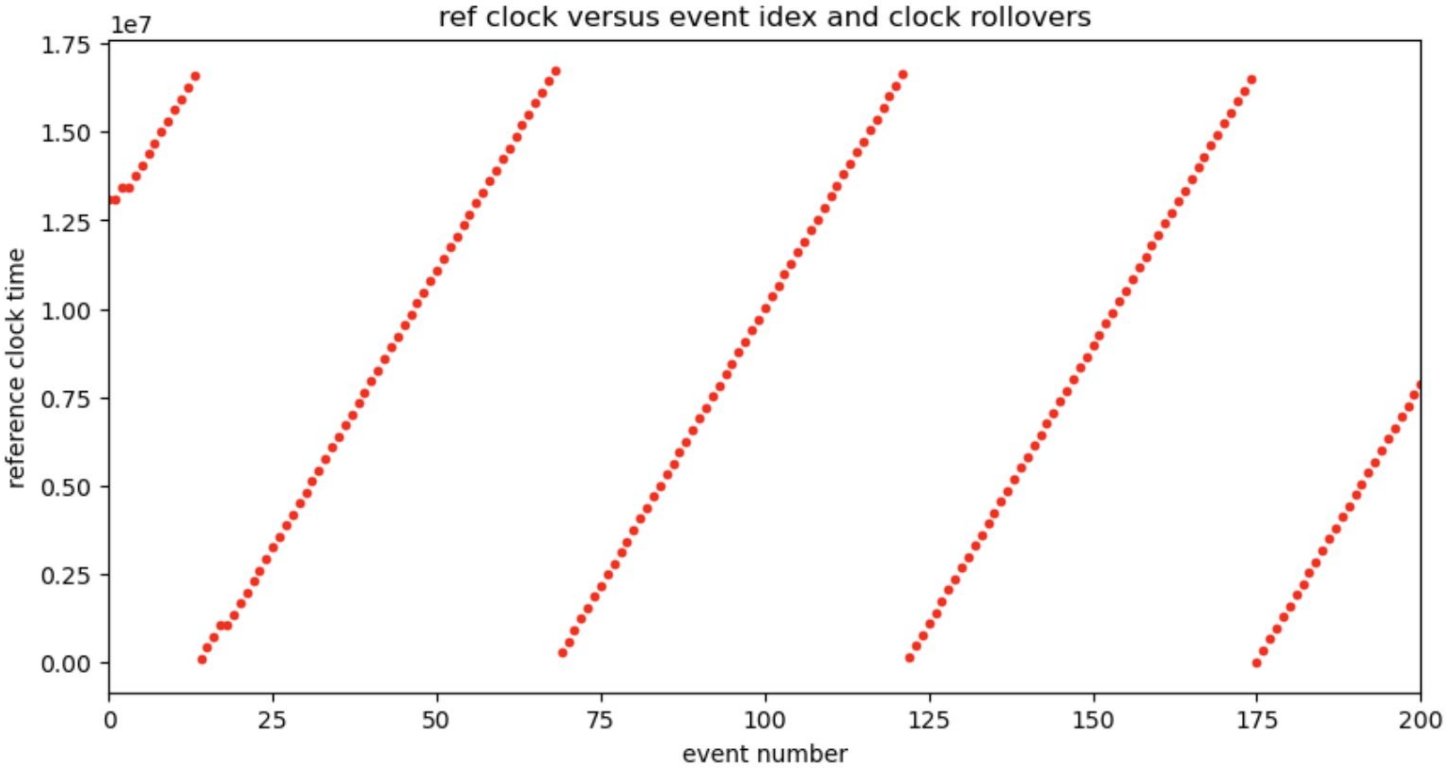
Flexible DQM

- Similar to what was done for g-2
- Each dashed box can be “separated” if need be
  - I.e. hosted on its own dedicated machine
  - Built in redundancy for separation of concerns
    - Ex: could support multiple webservers for one experiment
- Works for any midas experiment*
  - *Needs custom unpackers to match equipment
  - Analyzers/Unpackers can be hotswapped/configured
- Web frontend done
  - Can “plugin” new figure types
  - Demo available

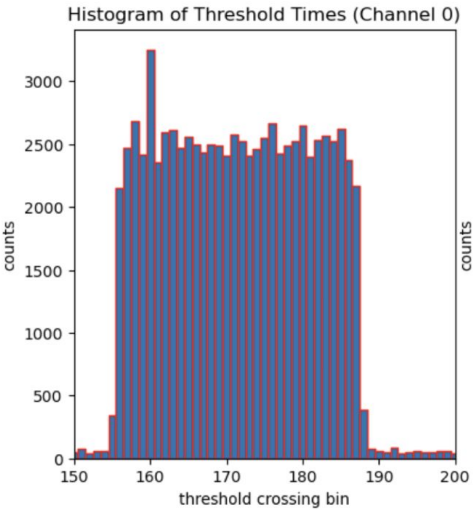


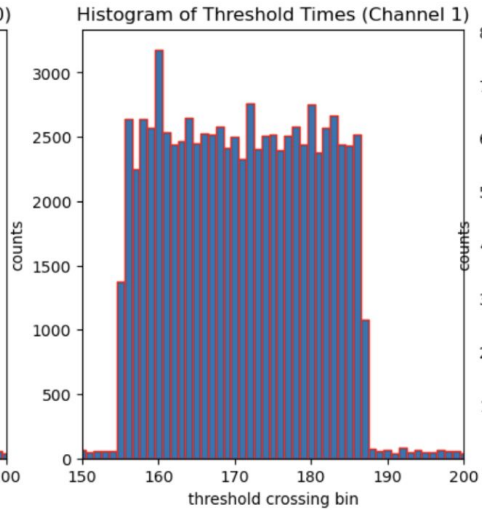
Auxiliary Slides

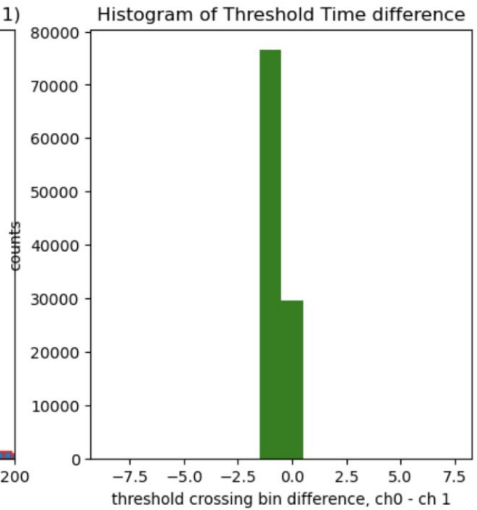
Reference Clock vs. Event Index

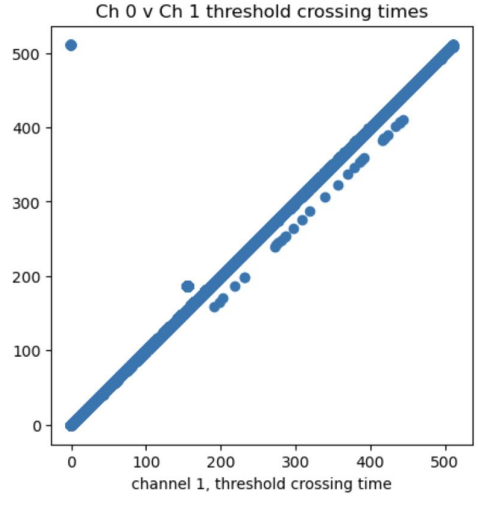


Threshold Times for two time coincident signals



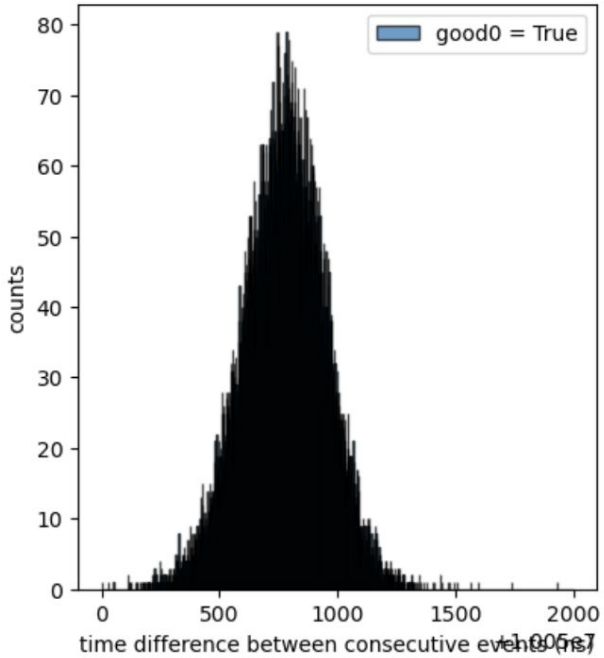


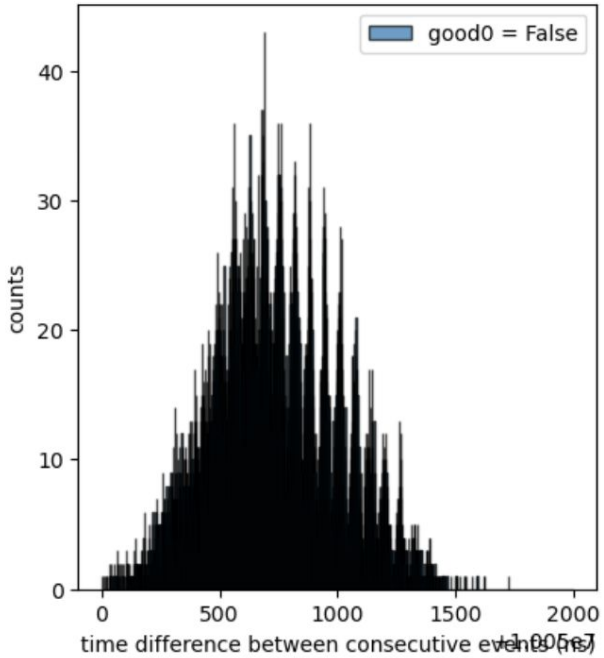




Good vs. Bad events

- “Good” means threshold crossing in expected time location on digitized islands
- “Bad” events have the threshold crossing outside that time window





g-2 DQM system

- New DQM is conceptually similar
  - No “midas-to-art” since we aren’t using art framework
  - node.js (webserver) can still be used, but I prefer using FASTAPI in python
  - Plotly still used for all the figures (can use other tools as well)
- Why start from scratch?
  - Update to modern software
  - Ability to make more flexible by leveraging
    - “Reflection” via rootcling (unpackers/analyzers)
    - Modular plot implementation via modern React Webapp