Upstream DAQ – Firmware

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PDI code review

- Have been working with Ivana on improving TPG fw/sw agreement with the most recent set of sw test patterns

- Found and fixed a fw bug that looks like it solves the issue of not having a Hit Start < 8 clk ticks

  - FixedHits A, B, C, D, E, F & G have 100% agreement between fw/sw (before the fix only 3 of them had full agreement)

  - UniqueHits A, B, C, D & E also have 100% agreement (before the fix there wasn't a full agreement for any of them)

  - UniqueHits D & F still showed a small disagreements

- Looking into this found a few corner case that caused issues in the Hit Finder block

  - Applied a patch ➔ UniqueHits D: 100% agreement, UniqueHits F: disagreement is 5 packets out of several thousand

PDI code review

- Need to make Hit Finder block more robust against "corner-cases"

  - Originally assumed that found Hits will last several clock cycles (i.e. > 6)

    - **Can we or should we assume something like this? Probably not?**

  - Problems are caused when 2 hits are close to each other, with the 2nd hit lasting just a few clock ticks

  - Worst case scenario: several Hits that last 3 clk cycles and are 1 clk cycle apart

    - **Is this possible? Should it be flagged somehow?**

- **December fw release coming up!**

  - Everything related to PDI code should be included

  - Code review, bug fixes, FELIX rebase